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Editorial

Biopharmaceuticals –the Emerging Trend in Future Therapy with Promises, Problems and Prospects

The term biopharmaceutical describes treatments developed and produced in live cell systems. The drugs may also be referred to as biological therapies or cytokine modulators.[1] By targeting molecules involved in the inflammatory response, such as tumour necrosis factor-±, some biologicals help to reduce or suppress inflammation, potentially reducing joint damage in rheumatoid arthritis. They are used for an increasing number of indications and are approved in some countries for conditions such as rheumatoid arthritis, ankylosing spondylitis, psoriasis, psoriatic arthritis, Crohn's disease, and ulcerative colitis. Most of these conditions are autoimmune diseases characterized by up regulation of cytokines such as interleukins; tumour necrosis factor and T and B lymphocytes contribute to the inflammation, a central pathophysiological feature of these conditions.[1]

Biopharmaceuticals and gene therapy are two different therapeutic concepts. Biopharmaceuticals is an umbrella term applied to the use of nucleic acids or 'engineered' proteins and antibodies in medicine, while *gene therapy* refers specifically to attempts to use those nucleic acids to reprogram cells to prevent, alleviate or cure disease.[2]

Biopharmaceuticals have already become a well-recognized part of therapy. These drugs still face many problems, not the least of which is the cost of manufacture, but the technology is established and maturing fast. More than 211 biopharmaceuticals had been licensed around the world by the previous year, and that 250 million patients were receiving these products.[2]

The current landscape of biologics promises continuous growth. Since 1995, the applications for biotech patents have increased 25% every year. There are over 200 approved drugs on the market, over 1,500 drugs are being evaluated in clinical trials, and many more drugs are in the pipeline. Biopharmaceuticals currently comprise about 40 % of new drugs approved. These advances have fuelled the growth in biotherapeutics. Another driver is the development of Monoclonal Antibodies (MABs) and human insulin: In 2012 four out of five top biotherapeutics made use of MABs.[3]

There are several reasons why it is so attractive. First, the approach offers the potential for radical cure of single-gene diseases such as *cystic fibrosis* and the *haemoglobinopathies*, which are collectively responsible for much misery throughout the world. Second, many other more common conditions, including malignant, neurodegenerative and infectious diseases, have a large genetic component. Conventional treatment of such disorders is woefully inadequate, so the promise of a completely new approach has enormous attraction.[2]

There are several problems associated with the manufacture of any type of recombinant protein, and one of the most pressing is the choice of expression system. Many recombinant proteins are expressed in bacterial systems (*Escherichia coli*, for example), which are useful because cultures grow quickly and they are generally easy to manipulate. Disadvantages include the fact that they may contain bacterial endotoxins, which must be scrupulously removed before administration to patients, and that bacterial cells do not accomplish the same type of *post-translational processing* (e.g. glycosylation) as mammalian cells. This could pose problems if the protein's action is crucially dependent on this modification. To circumvent these problems, mammalian (e.g. Chinese hamster ovary, CHO) cells are also used as expression systems, although here the problem is often one of yield. Such cells require more careful culture, grow more slowly and produce less product, all of which contribute to the cost of the final medicine.[2]

There are, however, a number of emergent technologies that could revolutionize the production process. The use of plants to produce recombinant proteins has attracted considerable interest .Several species have shown promise, including the tobacco plant. Human genes of interest can readily be transfected into the plant by using tobacco mosaic virus as a vector; the crop grows rapidly (yields a high *biomass*) and offers a number of other advantages. But attention has also focused on edible plants such as lettuce and bananas. The advantage here is that some orally active proteins, such as vaccines, expressed in the plant could be consumed directly without the need for prior purification. Several such proteins have already been produced in plants, and some are in clinical trial.[2]

Another technology that could dramatically increase the yield of human recombinant proteins is the use of transgenic cattle. A dairy cow can produce some 10 000 litres of milk per year, and recombinant proteins introduced into the genome, and under the control of promoters that regulate production of other milk proteins, can generate yields as high as 1 g/l .[2]

We require long term data on benefits and safety of different biologicals .As few controlled trials can be continued ethically for more than one year, clinical epidemiologist and pharmaco-epidemologists need to agree on developing national and international registries that provide such data.[4,5]

Cost effectiveness may improve if the price of biological falls with the emergence of biosimilars and increasing competition. Our clinicians, policy makers and pharmaceuticals companies should look forward with the view of targeting the future of this potential therapy.

(Sir Salimullah Med Coll J 2017; 25: 36-37)

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Original Articles

A Morphometric Study of Position of Diaphyseal Nutrient Foramina of Human Left Tibia

Mahbuba Akter[1], Humaira Naushaba [2], Uttam Kumar Paul[3],Laila Farzana Khan[4] Fahmida Zaman[5], Israt Jahan Tania[6]

Abstract

Context : *Nutrient foramen is the external opening of the nutrient canal in a bone. The anatomical knowledge about the position of nutrient foramen on tibia is very important clinically, especially for orthopedic and vascular surgeons as well as to radiologists for planning of treatment.*

Materials and methods : *This is an observational descriptive type of study which was carried out in the department of Anatomy of Sir Salimullah Medical College (SSMC), Dhaka from July 2014 to June 2015 performed on two hundred (n=200; male=102 & female=98) fully ossified dry human left tibia. This study was carried out on the samples by direct observational method.*

Results: *The position of nutrient foramen was on the upper 1/3rd of the shaft in 80.5 % and in the middle 1/3rd of the shaft in 19.5 % and absent in the lower 1/3 rd of the shaft.*

Conclusion: *The anatomical knowledge gained from this study and the data recorded might be helpful during various surgeries over tibia like fracture treatment, bone transplant , bone grafting, reconstruction surgery, tumor resection, and vascular surgeries of lower limb.*

Keywords: *left tibia, nutrient foramina, Morphometric Study.*

(Sir Salimullah Med Coll J 2017; 25: 38-40)

Introduction

Nutrient canal opens externally at certain location on the bone surface, called nutrient foramina that contain nutrient arteries and peripheral nerves [1]. The main blood supply to long bones is from the diaphyseal nutrient arteries, especially during active growing period in the embryo and fetus, and during early phases of ossification[2]. The long bone is supplied by nutrient artery which enters the bone obliquely through nutrient foramen which is directed away from the growing end. The nutrient artery supplies the bone marrow and the inner two third of the compact part of the shaft. During childhood , long bones receive about 80% of blood supply from nutrient arteries and in case of their absence, the vascularization occurs through periosteal vessels[3]. The position of nutrient foramen in mammalian bones varies and may alter during growth[4]. In free vascular bone grafting, the nutrient arterial supply is extremely important and is preserved to promote fracture repair, a good blood supply being necessary for osteoblast and osteocyte cell survival, as well as facilitating graft healing in the recipient[5]. Knowledge of the position of nutrient foramina is useful in both medicolegal practice and certain surgical procedures like bone transplant , reconstruction surgery, tumor resection and during placing internal fixation device[6,7]. In transplant techniques, the statistical data about nutrient foramen and nutrient artery in long bone is required [8]. In medicolegal practice, it may be possible to estimate the total length of the bone[9]. The areas or regions with a good blood supply heal more rapidly than those with a poor blood supply. The tibia is a good example of such process.

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Because of the absence of nutrient foramina in the distal third of the tibia, fractures in that region tend to show delayed union or malunion[10].

So the findings will enlighten the clinicians, clinical anatomists and morphologist. Study on morphometry of nutrient foramen left tibia of various populations were analyzed. The aim of this study was to record the position of nutrient foramina of fully ossified dry human left tibia of Bangladeshi people.

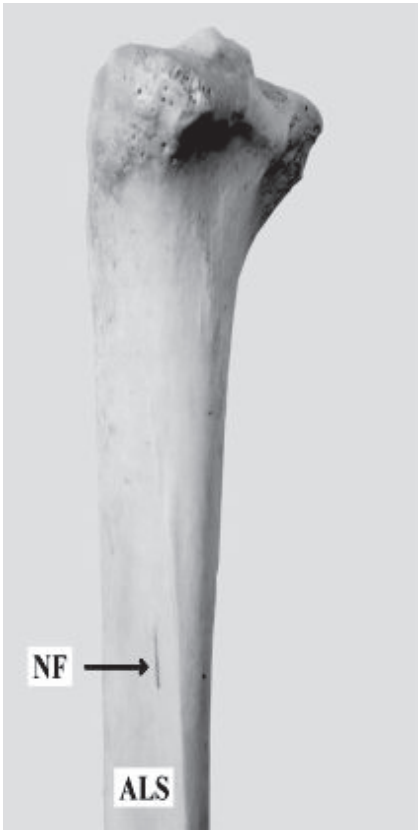

Fig.-1: *Nutrient foramen on anterolateral surface.*

Materials and methods

This is an observational descriptive type of study which was carried out in the department of Anatomy, Sir Salimullah Medical College (SSMC), Dhaka, from July, 2014 to June, 2015 performed on two hundred (n=200; male=102 & female=98) fully ossified dry human left tibia.This morphometric study was carried out on all the samples by direct observational method.

Procedure for determination of position of nutrient foramen

The nutrient foramen was identified by the presence of a well-marked groove, often slightly raised edge at the commencement of the canal. For the position of nutrient foramen , each bone was divided into three equal parts and marked. Position of nutrient foramen was observed and recorded from these three segments of the shaft.

Ethical clearance

This study was approved by the Institutional Ethics Committee (IEC) of Sir Salimullah Medical College, Dhaka.

Results

Table 1 showed that the nutrient foramen was on the upper 1/3rd of the shaft in 80.5 % and in the middle 1/3rd of the shaft in 19.5 % cases. On the upper 1/3rd of the shaft nutrient foramina were more in female (87.8%) than in male (73.5%) and on the middle 1/3rd of the shaft nutrient foramina were more in male (26.5%) than in female (12.2%) subjects. Nutrient foramen was absent in the lower 1/3 rd of the shaft.

Table-I

Position of nutrient foramen on the shaft of the left tibia

Position of nutrient foramen	Both sexes(n= 200)		Male(n= 102)		Female(n= 98)	
	Frequency	Percentage (%)	Frequency	Percentage (%)	Frequency	Percentage (%)
Upper 1/3rd	161	80.5	75	73.5	86	87.8
Middle 1/3rd	39	19.5	27	26.5	12	12.2
Total (n)	200	100.00	102	100.00	98	100.00

Discussion

The diaphysis of the long bones are irrigated by one or more nutrient arteries that pierce through compact bone and divide the medullary cavity into ascending and descending branches [11]. It is generally agreed that the vessels that occupy the nutrient foramen are derived from those that took part in the initial invasion of the ossifying cartilage. So the nutrient foramen was at the site of original centre of ossification[12]. There is variations in position of nutrient foramen. An understanding the variations in position of nutrient foramina in long bones is important in orthopaedic surgical procedures such as joint replacement therapy, fracture repair, bone grafts and vascularized bone microsurgery [13]. Preoperative planning of such procedures is vital for all such surgical interventions, together with an appropriate understanding of the extraosseous vascular supply for a successful outcome [14]. Accidental ligation of the nutrient artery of a long bone leads to an immediate decrease in the bone blood flow.In tibia, the nutrient artery usually arises directly from the popliteal or from the posterior tibial arteries. The arrangement of the diaphyseal nutrient foramina in the long bones usually follows a definite pattern [15]. Nutrient foramina was observed predominantly on the upper 1/3rd of the shaft of fully ossified dry human left tibia. This finding is similar to the findings of the study reported by Kalpana et al [16] and Gupta and Kumari[17].Both of the studied on Indian population. The present study was carried out on tibia collected from Bangladesh. Skeletons that are available in Bangladesh also come from neighboring countries. Bangladeshies are mixed race of Caucasoid , Negroid , Mongoloid and Australoid group. So conclusion on the position of nutrient foramina regarding race could not be reached.

Conclusion

The present study was conducted with an attempt to find out the position of nutrient foramen of left tibia which might help the anatomist, orthopaedic surgeon and vascular surgeon for planning of treatment in Bangladeshi population.

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Evaluation of Diagnostic Methods for Genital Chlamydia Infection in Pregnant Women

Akhtarun Naher[1], Sadia Afroz[2], Iffat Ara[3], Khadeza Khatun[4], Faiza Mukarram[5], Nilofer Nasreen Ava[6]

Abstract

Chlamydia trachomatis (CT) *is the most common cause of curable bacterial sexually transmitted infection worldwide. Chlamydia infection in pregnancy is associated with increased perinatal and neonatal complications. So proper diagnosis and treatment in pregnancy is important to minimize adverse pregnancy outcome. In countries without adequate laboratory support, diagnosis and treatment of CT infection is often done on sydromic approach, which often lead to incorrect diagnosis. The aim of the present study was to evaluate different diagnostic methods and syndromic management of genital CT infection in pregnant women. This cross sectional study was conducted at National Institute of Preventive and Social Medicine (NIPSOM), Dhaka from a period of January to June 2014. Study was conducted on 244 pregnant women attending Department of Obstetrics and Gynaecology of different hospitals and some private chambers of Dhaka city. A pretested structured questionnaire was used to collect data. The respondents were examined and specimens were collected for identification of CT. It was revealed that, highest number of positive cases (42.1%) were in younger age group (d"30 years). Evaluation of different tests showed that 36.5% positive cases were detected by ICT, and 29.1% by ELISA, followed by Giemsa staining (7.3%) and Iodine staining (4.9%). Detection of CT were more among asymptomatic cases (49.0%) than among symptomatic cases (18.2%). Syndromic approach for diagnosis of Chlamydia infection had low (OR =1.25, 95% Cl: 1.2 to 3.5) discriminitive ability. The findings of this study reveals that simple, rapid, cheap and noninvasive method like ICT and microscopic examination by Giemsa staining could be suitable tool for diagnosis in low resource setting. Early and accurate diagnosis of genital Chlamydia infection in pregnancy can reduce perinatal complications and empirical, widespread use of antibiotics in pregnant women.*

Key words: Chlamydia trachomatis, *diagnosis, pregnancy.*

(Sir Salimullah Med Coll J 2017; 25: 41-46)

Introduction

Genital Chlamydia infection is recognized as one of the most common sexually transmitted infections (STIs) world wide and is an important cause of morbidity and mortality, Particularly in developing countries[1]. In 2014 The World Health Organization reported that among 357 million new STI cases, 131 million cases were due to this infection[2]. In USA, *Chlamydia trachomatis* is also the most commonly reported notifiable disease, and there are approximately four milliom new chlamydial infections per year. It is the leading cause of bacterial STI in industrialized countries. It is estimated that <10% of these cases are diagnosed, resulting in an adverse impact, especially in women not treated for this infection . Death due to STIs can be preventable in virtually all cases[3].

Chlamydial infections during pregnancy cause a variety of perinatal complications. Inclusion conjunctivitis, pneumonia, and other complications develop in neonates born to mothers infected with *C. trachomatis*. Delivery of low-birth-weight infants and premature rupture of membranes occurs more frequently in women with genital *Chlamydia* infection. It also has been suggested that *C.*

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trachomatis infection in pregnant women may be related to premature labor, increased risk of ectopic pregnancy, spontaneous abortions, postpartum endometritis and to perinatal death[4].

Even though various diagnostic methods like isolation in cell culture, antigen detection by immunofluorescence, molecular detection methods like PCR, LCR, are available, these methods of diagnosis need specialized equipments, infrastructure and invasive methods of collection procedures. Thus, the diagnostic facilities for *C. trachomatis* in developing countries are very limited to few research laboratories. Microscopic examination (Giemsa, Immunofluoroscence, Iodine staining) and Serological methods like Enzyme Linked Immuno sorbant Assay (ELISA) and Immuno chromatographic test (ICT) tests are technically simple to perform and comparatively less expensive[5]. The ideal testing method should be rapid, sensitive with high specificity leading to identification of highest number of true infections while keeping the false positive rates very low.

In addition to laboratory diagnosis by different tests, syndromic approach for diagnosis of genital *Chlamydia* infection is widely used, specially in developing countries. Syndromic diagnosis of genital *Chlamydia* infection is based on the identification of a group of symptoms and signs that characterize a clinical condition[6]. It is simple, cost effective, and capable of yielding rapid diagnosis for immediate treatment. Despite these advantages, it has several limitations, syndromic diagnosis relies on subjective judgment, cannot detect asymptomatic infections, and may result in over diagnosis or overtreatment and potential drug resistance[7].

This study therefore was carried out to evaluate different diagnostic methods including syndromic diagnosis of genital *Chlamydia* infection in pregnant women.

Materials and Methods

This cross sectional study was conducted in Department of Microbiology and Parasitology, NIPSOM, Dhaka, from January to June 2014. During this Period a total of 244 symptomatic and asymptomatic pregnant women attending outpatient and inpatient of Department of Obstetrics and Gynaecology of Dhaka Medical College Hospital, Shahid Suhrawardy Medical College Hospital and some private chambers of Dhaka city were included in the study. Pregnant women with recent (within last two weeks) antibiotic treatment or not willing to participate were excluded from the study.

A structured questionnaire were used for each patient. All the relevant informations and data on sociodemographic factors, current reproductive tract infection symptoms, diagnosis and prescribed treatment were systemically recorded in pre-designed data sheet. All patients underwent a genital examination, appropriate specimen were collected and abnormal signs in external and internal genitalia were recorded in details. Written informed consent was obtained from all participants.

Sample collection

Endocervical swab- The sample was collected by female doctors. Using a swab moistened with sterile saline, endocervix was cleaned, removing any excess mucous or inflammatory exudates. Then using a fresh sterile cotton wool swab, the specimen was collected inserting it about 1 cm into the endocervical canal and gently rotating it against the wall of endocervix. The swab were placed in a dry sterile tube and delivered it to the laboratory[8]. When delay was unavoidable, the swab was refrigerated at 2-8^{0}C.

Blood – Venous blood was collected aseptically. The punctured area was disinfected with iodine and 70% alcohol. With a sterile disposable syringe, 3ml whole blood was collected in a test tube by venepuncture. The blood was centrifuged for separation of plasma or serum[8]. If specimen was not used immediately, it was refrigerated at 2-8^{0}C.

Laboratory procedures

Endocervical swabs (ECS) were used for antigen detection by Immunochromatographic Test (ICT), microscopical identification of intracytoplamic inclusion bodies by Giemsa, and iodine staining[9]. Endocervical swabs were placed in transport media, transported to the laboratory on the same day, and stored at -20^0 C prior to batch processing.

The ICT (Abbott Laboratories, IL) were performed according to the manufacturer's instructions.

Serum sample were used for detection of antibody by Enzyme linked Immunosorbent Assay (ELISA), according to the manufacturer's instructions.

Statistical analysis

Data were analyzed with the statistical package SPSS version 16. The validity of different diagnostic strategies (the existing STI management guidelines, diagnosis based on symptoms or signs alone, and diagnosis based on a risk score) was assessed by measuring sensitivity, specificity. Positive and negative likelihood ratios (LR+ and LR-) and positive and negative predictive values (PPV and NPV) . The LCR based laboratory diagnosis of cervical infection was used as the reference standard. The study was approved by ethical committee of NIPSOM.

Results

Among the 244 respondents, 71(29.1%) were sero-positive for lgG by ELISA. The highest number of positive cases (42.1%) were in the younger (d"30 years) age group ((Table-I) . The lg G *Chlamydia trachomatis* positive cases were significantly higher in ≤ 30 years age group ($p<0.01$).

Table-I

Distribution of the Sero positive respondent by age (n=244)

Age group in years	Cases (no)	IgG Positive	% of positive cases
≤ **30**	164	69	42.1
≥**31**	80	02	**2.5**
Total	244	71	29.1

Distribution of CT positive cases by different method shows, higher number of positive cases were detected by ICT (36.5%) and ELISA (29.1%) than by microscopic examination of intracytoplasmic inclusion bodies by Giemsa staining (7.3%) and Iodine staining (4.9%) method (Table-II).

Table-II

Distribution of Chlamydia trachomatis positive cases by different methods (n=244)

Methods	Frequency of Positive cases	Percentage of positive cases
ICT Technique	89	36.5
ELISA	71	29.1
Giemsa Staining	18	7.3
Iodine staining	12	4.9

The comparison in relation to presenting symptoms shows, the rate of detection of *Chlamydia trachomatis* by ICT were more among asymptomatic (49.0%) cases than among symptomatic (18.2%) cases. The rates of detection of *Chlamydia trachomatis* were significantly higher ($p<0.01$) among asymptomatic women than symptomatic women (Table-III).

Table-III

Distribution of the Immunochromatographic test (ICT) positive cases by symptoms (n=244)

Respondents	Frequency	Number of positive cases	Percentage of positive cases
Symptomatic	99	18	18.2
Asymptomatic	145	71	49.0
Total	244	89	36.4

Regarding syndromic management options for the diagnosis of *C. trachomatis* in antenatal care in the absence of specific diagnostic tests: the syndromic algorithm, symptoms and signs. The syndromic approach did not identify women with *C. trachomatis* in our study population. There were 59(50.4%) women who reported believing that they had a genital illness, but the prevalence of cervicitis was not significantly higher in this group (OR=1.3, 95% Cl: 1.7 to 4.5). Of clinical findings, vaginal (excluding candida-like) discharge was significantly associated with increased prevalence (OR =1.25, 95% Cl: 1.2 to 3.5)of cervicitis (Table-IV).

Table-IV

Univariate analysis of symptoms and signs for diagnosis of C.trachomatis infection among pregnant women (n= 244)

	No. (244)	Women with cervicitis No.(%)=117(48)	Odds ratio	Confidence interval	P-value
Subjective Symptoms					
Vaginal discharge					
No	145	55(47.0)	1	1.1-2.0	0.718
Yes	99	62 (52.9)	1.2		
Lower abdominal pain					
No	216	36.(53.8)	1	0.8-2.2	0.322
Yes	28	54(46.2)	1.4		
Thinks she has an infection					
No	167	58(49.5)	1	1.7-4.5	0.450
Yes	77	59(50.4)	1.3		
Clinical signs					
Vaginal discharge					
Negative	104	37(31.6)	1	1.2-3.5	0.640
Positive	140	90(76.9)	1.25		
Candida-like discharge					
Negative	179	57(48.7)	1	1.3-4.1	0.014
Positive	65	43(36.8)	2.2		
Moderate of profuse discharge					
Negative	188	67(57.3)	1	0.8-2.2	0.322
Positive	56	50(42.7)	3.3		
Yellow discharge					
Negative	149	42(35.9)	1	1.2-5.8	0.184
Positive	99	75(64.1)	2.7		
Thin/runny discharge					
Negative	134	56(47.9)	1	0.4-1.9	0.718
Positive	110	61(52.1)	4.4		
Foamy discharge					
Negative	135	58(49.6)	1	0.5-1.1	0.279
Positive	109	59(50.4)	1.5		
Smelly discharge					
Negative	159	51(43.6)	1	0.6-1.4	0.431
Positive	85	66(56.4)	1.6		
Cervical bleeding					
Negative	223	108(92.3)	1	0.4-1.3	0.234
Positive	21	07(31.6)	1.2		

Discussion

Genital chlamydia infections are the most common sexually transmitted diseases worldwide. Cervicitis, urethritis and pelvic inflammatory diseases are common among the genital Chlamydia infections[10]. Moreover Chlamydial infection during pregnancy causes a variety of perinatal complications like delivery of low birth weight (LBW) babies , premature labor, spontaneous abortion and perinatal death[11]. Because of these risks, screening of pregnant women at the first antenatal visit is recommended by CDC and US preventive Services Task Force[12].

In the present study, the highest number of positive cases (42.1%) were found in the younger age group (d"30 years) in comparison to 24.3% (30-39 years). The youngest and oldest positive cases were in the age 18 and 45 years respectively. A study by Shamsuzzaman et al showed the higher number of genital CT infection in the age group 20 to 30 (82.3%) and 31-40 year 38(46.1%) respectively[13]. Martin et al have linked the female genital Chlamydia trachomatis infection in younger age group[14]. All the studies mentioned above are very close to our finding . The younger group is more sexually active than elders which in turn elevate the chance of spread of infection .

In this study, it was found 29.1% sero-positivity of *Chlamydia trachomatis* IgG by ELISA among the 244 study cases . Morre et al from Netherlands reported 35% sero-prevalence of CT for IgG[15]. A study by Mayaud et al from Tanzania found 29.4% IgG to CT in serological screening, which is in accordance with our result[16]. The differences in seropositivity rates between the pregnant and non-pregnant women was statistically significant (p<.001), in their study, higher sero-positivity in pregnant women group might be due to increased susceptibility of antenatal cases to CT during sexual activity and increased proliferation of the organism due to decreased immunity by physiological immumo-suppression in pregnancy.

In the present study, *Chlamydia trachomatis* infection was 49.0% in asymptomatic and 18.2% in symptomatic women. An Indian study showed 15.1% symptomatic positive cases and 46% asymptomatic positive cases for *Chlamydia trachomatis* infections[17]. The result of our study correlates with the Indian study. There is significant statistically difference between symptomatic and asymptomatic positive cases. This high seroprevalence in asymptomatic cases can be explained by past infection. Detection of IgM can differentiate past infection from active infection.

Regarding Microscopic examination, result of the Iodine preparation for Inclusion Bodies detection was 4.9% and that of Giemsa staining was 7.3% positive only. Zapata et al reported only 10% positive cases by Iodine staining in cell line culture[18]. All inclusions do not possess matrix or some contain so little that they are likely to escape detection by the iodine staining. This limitation perhaps reflected in the current study. Initial inclusion body may not be stained with Iodine at all because glycogen is present only for limited period in the developmental cycle. So iodine stain and Giemsa stain may fail to detect inclusion Bodies (IB) if the specimen does not contain the material during the developmental period in that time.

Evaluation of syndromic approach for diagnosis of genital Chlamydia infection elicited that, symptoms of increased discharge or lower abdominal pain are not predictive of Chlamydial infection in pregnant women in Bangladesh. These symptoms are non-specific; they are common in pregnancy, and their association with cervical infections is even lower among pregnant than among non-pregnant women. The Vaginal Discharge Syndrome (VDS) algorithm is used extensively to diagnose cervical infections in antenatal care in Botswana[19], but our results show that this management is no better than random treatment. In this study , neither symptoms nor signs of yellow discharge are associated with cervical infection. In pregnancy, symptoms or signs of vaginal discharge in general, Yellow discharge, or other specific discharge characteristics should not be used as criteria for treating *C. trachomatis* . Several reviewer emphasize that the syndromic approach should not be used as a diagnostic tool for *C. trachomatis* [20,21]. This study concurs with a substantial body of knowledge indicating that the syndromic approach should be used neither as a case management nor as a clinical screening tool to identify *C. trachomatis* among pregnant women in Bangladesh .

Therefore laboratory tests are needed to diagnose and confirm Chlamydial infection. Early and

accurate diagnosis will reduce perinatal complications and widespread , empirical administration of broad spectrum antibiotics in pregnant women.

Conclusion

From the present study it may be concluded that, although in extensive use, syndromic approach is unsuitable for genital Chlamydia infection in pregnant women. Laboratory based diagnostic tests are needed to diagnose and confirm infection, and to formulate effective management strategies. Detection of *Chlamydia trachomatis* by increased number of leukocytes in Giemsa staining of infected secretion and by Immunochromatographic test (ICT) could be simple, rapid, cost effective method for diagnosis. But more reliable and sensitive diagnostic method for genital Chlamydia infection in Bangladesh should be further explored. Screening for Chlamydial infection should be routinely done by suitable tests in pregnant women for early therapeutic interventions and to prevent serious complications.

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Observation of 30 Cases of Ectopic Pregnancy in A Tertiarry Care Hospital of Dhaka City

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Abstract

This study aimed to identify differentpressentations of ectopic pregnancy and the management practiced in a hospital setting. 46.67% percent cases were admitted with the clinical features of ruptured ectopic pregnancy. The most common presentations were pain in lower abdomen (100%), short period of amenorrhoea (86.67%), Irregular vaginal bleeding(60%), and hypovolemic shock (20%).Among the amenorrhoeic patients, commonest duration of amenorrhoea was 6-8 weeks (53.33%). Ampullary part of the fallopian tube was the commonest affected site (36.67%)and the right sided tube was affected (60%) more than the left. About 20% patientshad a previous histotyof MR and 10% patient had previous history of appendicectomy. 80% patient needed blood transfusion and all of the 30cases were treated by open laparotomy and no patient died of massive intraperitoneal haemorrhage.

Keywords: *Ectopic pregnancy, Blood trnsfusion*

(Sir Salimullah Med Coll J 2017; 25: 47-51)

Introduction

Ectopic pregnancy (EP), a high risk condition in which a fertilized ovum implants outside the uterine cavity, affects 1%-2% of all pregnancies and poses a significant threat to women of reproductive age.It is the leading cause of maternal death during the first trimester of pregnancy [1]. The death rate is about 1 per 2000 EPs and 15% of all maternal deaths[2]. In 95% of EPs fertilized ovum implants in the tubes but rarely in other organs like abdomen, ovaries, cervix, spleen, omentum, cessarian section scar and intramural[2]. Ectopic pregnancy is assuming greater importance because of its increasing incidence and its impact on womens fertility[3]Early diagnosis of ectopic pregnancy presents a challenging problem[4]. Diagnosis of ectopic pregnancy is sometimes difficult as the presentation is variable. For diagnosis history taking, pelvic examination, investigations like serum βhCG estimation, transvaginal ultrasonography and laparoscopy are helpful. Prognosis of ectopic pregnancy is dependent on early recognition and treatment[5].In recent years, ectopic pregnancy incidence is on the rise. Possible explanations for this increase are increased risk factors (sexually transmitted diseases, assisted reproductive techniques, increased tubal surgery and sterilizations) and the development of diagnostic methods (transvaginal ultrasonography and measurement of βhCG)[6]. 75% of tubal pregnancies can be detected by transvaginal ultrasonography [7]. Recent advances in diagnosis and treatment have led to a 50% reduction in mortality rates since the 1980s[1]. After a definitive diagnosis has been made, treatment options include medical, surgical, or expectant management[1].

This study aimed to identify the incidence, different presentations of ectopic pregnancy and the management practiced in a hospital setting.

Materials and Methods

This prospective study was carried out in the department of Gynae and obstretrics of SSMC and Mitford hospital between January 2014 to April 2014. Thirty cases of ectopic pregnancy were

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included following a preset protocol. Age, parity, history of contraception, clinical presentations, necessary investigations and management of each patient were considered.

Results

During the study period, A total of 30 patients were diagnosed as EP. Incidence was 1.34% out of 2225 pregnant women admitted at the department of obstetrics and Gynaecology of SSMC.

Table I

General Characteristics of Patients (n=30)

General Characteristics	Age in years-
15-24	10 (33.33%)
25-34	13(43.33%)
35 years and above	7(23.33%)
Parity-	
0	9 (30%)
1-3	18 (60%)
4-5	3 (10%)
>5	0
Predisposing factors-	
History of subfertility	5 (16.67%)
History of TB	2 (6.67%)
History of MR	6 (20%)
History of abortion or D&C	6 (20%)
History of Appendicectomy	3 (10%)
Ovarian cystectomy	1 (3.33%)
Caesarean section	4 (13.33%)
Contraceptive history-	
No history of Contraception	5 (16.67%)
Barrier method	3 (10%)
IUCD	1 (3.33%)
OCP	10 (33.33%)
Norplant	1 (3.33%)
Injection	5 (16.67%)
BLTL	0

TB-tuberculosis, MR-Menstruation regulation, IUCD-Intrauterine contraceptive device, D&C-Dilatation and curettage, OCP-Oral contraceptive pill, BLTL-Bilateral tubal ligation.

Table I presented general characteristics of patients. 76.67 % of the patients presented between 15 to 34 years of age. 18 of the women had 1-3 children before the occurance of the ectopic and 9(30%) patients had ectopic during their 1st pregnancy. History of subfertility was present in 5(16.67%) cases. History of MR present in 6(20%) cases. 16.67% of the patient with ectopic pregnancy did not use any contraceptive method.

Table II

Clinical Presentations of patients (n=30)

Name of variables	n=30
Patients complaints	
Pain in lower abdomen	30 (100%)
History of amenorrhoea	26 (86.67%)
Irregular per vaginal bleeding	18 (60%)
History of syncopal attack	4 (13.33%)
Presence of hypovolemic shock	6 (20%)
Difficulty in urination	8 (26.67%)
Difficulty in defaecation	6 (20%)
Abdominal discomfort	8 (26.67%)
Duration of Amenorrhoea-	4 (13.33%)
Noamenorrhoea<6 weeks	8 (26.67%)
6-8 weeks amenorrhoea	16 (53.33%)
9-12 weeks amenorrhoea	1 (3.33%)
>12 weeks	1 (3.33%)
Examination Findings-	
Mild anaemia	15 (50%)
Moderate anaemia	10(33.33%)
Severe anaemia	5 (16.67%)
Perabdomial tenderness	27 (90%)
Abdominal distension	8 (26.67%)
Abdominal mass	1 (3.33%)
Palpable mass in fornix	7 (23.33%)
Fullness in POD	6 (20%)
P/V bleeding	14 (46.67%)
P/V examn not done	7 (23.33%)
Cervical excitation test	18 (60%)
Adnexal tenderness	16 (53.33%)

POD-Pouch of dauglas, P/V examn-Per vaginal examination.

Table II showed different types of clinical presentation. The most common presentation was abdominal pain(100%). History of short period of amenorrhoea was present in 86.67 % cases. 26 cases gave history of amenorrhoea and history of amenorrhoea was absent in about 4 (13.33%) cases. In this study 16 cases presented with 6-8 weeks of amenorrhoea and 15 cases(50%) presented with moderate to severe anaemia. Lower abdominal tenderness was present in 27 (90%) cases. On pelvic examination palpable mass was present in 7(23.33%) cases and cervical excitation was positive in 18(60%) cases.

Table III

Investigations of patients (n=30)

Pregnancy Test	
Positive	24 (80%)
Negative	3 (10%)
Not done	3 (10%)
Beta hCG	
Positive	11 (36.67%)
Negative	1 (3.33%)
Not done	18 (60%)
USG(Done in 25 cases)	
Complex mass or adnexal cyst or GS or fetal pole in adnexa with moderate pelvic collection	12 (40%)
Moderate pelvic collection	2 (6.67%)
Mixed echogenic structure in adnexa with slight fluid in POD	2 (6.67%)
Mild collection in POD	2 (6.67%)
Adnexal mass or adnexal cyst	5 (16.67%)
Mixed echogenic structure or GS in POD	1 (3.33%)
Abdominal pregnancy	1 (3.33%)

GS-Gestational sac

Urinary pregnancy test was positive in 27 (90%) of the cases. In 15(50%) of the cases, ectopic pregnancy was highly suspected by ultrasonography. Serum Beta hCG was done in 12cases, in 11 cases it was positive and in 1 case it was negative.

The most common site of ectopic pregnancy was fallopian tube(86.66%). Ampullary part was the commonest affected location and right sided tube (26.66%) was more affected (Table III).

Among the 30 cases of ectopic pregnancy 24 (80%) patients needed blood transfusion of varying amount. Immediate laparotomy was performed as soon as the case were diagnosed. Unilateral salphingectomy of the affected site was done in 18(60%) of the cases. Unilateral salphingectomy with tubectomy in the opposite tube was performed in 7(23.33%) of the cases. Unilateral salphingo-oophorectomy were done in 2 cases. Salphingotomy was done in 1 case. Removal of abdominal pregnancy was done in 1 case.

Table IV

Types of operation and operative findings of patients (n=30)

Name of variables	n=30
Site of Ectopic pregnancy	
Fimbrial end of fallopian tube	3 (10%) right-2, left-1
Ampullary part of fallopian tube	11(36.67%)right-8, left-3
Isthmic part of fallopian tube	9(30%) right-6, left-3
Interstitial	3(10%) right-1,left-2
ovary	3(10%)right-1,left-2
Rudimentary horn of bicornuate uterus	0
Secondary abdominal pregnancy	1 (3.33%)
Types of Operation performed	
Unilateral salphingectomy	18 (60%)
Unilateral salphingo-ophorectomy	2 (6.67%)
Resection of ruptured rudimentary horn of bicornuate uterus	0
Unilateral salphingectomy with other sided Tubectomy	7 (23.33%)
Salphingotomy	1 (3.33%)
Salphingostomy	0
Removal of abdominal pregnancy	1 (3.33%)
Removal of cystic mass from right adnexa	1 (3.33%)

Discussion

Ectopic pregnancy is a major problem in gynaecology because it is often difficult to diagnose and is associated with increased risk of mortality and impaired fertility[5]. The incidence of ectopic pregnancy varies from place to place even in the same country[5].In our study, the rate of ectopic pregnancy is 1.34%.The rate of ectopic pregnancy was 1.9% as reported by Lozeau and Potter in USA, and 1.04% and 1% by Bangash and Ahmad and Waseem respectively in Pakistan[8,9,10]. The classical findings of pain in the abdomen, amenorrhoea and vaginal bleeding is not seen in all the cases.The more extensive and rapid the disturbance is, the more clear is the clinical picture.On the other hand, an undisturbed unruptured ectopic pregnancy is more likely to be missed unless it is recognized by ultrasonography[3].Clinical presentation is extremely variable and high degree of clinical suspicion along with proper history taking and investigations are helpful for early diagnosis and treatment[5].In the present series 30(100%) of cases had pain abdomen. Pain was the most frequentand constant symptom and was complained of in all thecases. Pain abdomen before rupture is due to stretching of the tube or peritubal adhesions. It gets worse when the bleeding begins. Acute pain is complained of when the tube ruptures. Later the pain is due to blood in the peritoneal cavity or due to mass in the pelvis which add to pain[4].The present study is in comparison with Shah's study who reported pain abdomen in 97.3% of the cases[11]. In the present series amenorrhoea was present in 26(86.67%) cases. Though amenorrhoea is an important symptom, absence of amenorrhoea does not rule out the possibility of ectopic gestation [4].Priti reported amenorrhoea in 78.57%,Poonam reported amenorrhoea in 84% of patients [12,13].Delay in diagnosis often occurs as the presentation is very variable and different, which ultimately increases the risk of morbidity and mortality. The mode of presentation of ectopic pregnancy may be acute or chronic (silent)[5]. The acute presentation is associated with tubal rupture and massive intraperitonealhaemorrhage leading to acute abdominal pain and cardiovascular collapse[5]. In this study6 (20%) patients out of 30 cases presented with collapse (Table II). Muller et al reported that incidence of ruptured ectopic pregnancy as 44% and Protuondo et al reported 58% cases with intraabdominal haemorrhage[14,15]. The silent or chronic variety presents with localized tenderness and muscle guard in the lower abdomen, possibly with adnexal mass due to small amount of retroperitoneal bleeding as in tubal abortion and tubal mole[5]. In this study 5(16.67%) of the cases had palpable lump or mass. Ylostalo et al reported detection of adnexal mass separated from ovaries as suggestive of ectopic pregnancy[16]. In chronic cases diagnostic problem occurred due to different pattern of presentations. There was usually some vaginal bleeding, which followed lower abdominal pain and was easily mistaken for the late onset of menstrual period. Some authorities consider also no constant pattern of menstrual loss[17].

Vital signs fail to correlate with haemoperitonium from ruptured ectopic pregnancy[18]. Even after careful analysis of different presentations and modern diagnostic aids, it may still not be possible to diagnose ectopic pregnancy in all cases with certainty[19].

Along with clinical findings, 24 cases showed positive pregnancy test, negative in 3 cases. beta hCG were done in 12 cases and 11 of these showed positive result. USG showed huge fluid collection due to ruptured ectopic pregnancy in 14 cases. . Suspect adnexal mass in 7 cases. Suspect PID (mild fluid collection in cul de sac) in 2 cases and diagnose 1 abdominal pregnancy of 11 weeks..

Recent trend in the management of ectopic pregnancy is the use of a conservative, medical and surgical line of management. In this study all the cases were taken up for laparotomy and 80% the cases needed blood transfusion. This was mainly because a majority of the cases were referred or they came late to the hospital after the ectopic pregnancy had ruptured. Onlyone case was treated with methotrexate (MTX) but was failed and needed laparotomy. Treatment failure was defined as a drop of less than 15% in hCG concentration compared to baseline value after one week or failure result yielded from ultrasound examination[20]. A successful response to MTX was defined as the resolution of the hCG level less than 10 IU/ml[21]. In our study there was no maternal mortality.

Conclusion

Ectopic pregnancies represent a leading cause of morbidity and mortality for women of reproductive age. The incidence of ectopic pregnancy is on the rise world wide for the past twenty five years. The etiology of ectopic pregnancy are diverse. Prevention of STD, early treatment of pelvic inflammatory disease and early diagnosis and treatment of ectopic pregnancy can save many women's life and reproductive outcome.

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Gender Variation of Lipid Profile in Patients with Acute Stroke

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Abstract

Introduction: *Stroke is one of the major global health problems. It is the leading cause of adult disability. Mortality from strokes is the second leading cause worldwide.*

Method: *A cross sectional analytical study was carried out to see the association of lipid profile in acute stroke patients with gender variations. A total of 180 adult patients of both sex were included in this study among which 96 had ischemic and 84 had hemorrhagic stroke. Purposive sampling technique was adopted for the convenience of the study.*

Result: *Among study patients, 53.30% patients had Ischemic stroke and 46.70% had hemorrhagic stroke. Among ischemic stroke patients, 2.08% belonged to 18-28 yrs age group and 5.21% belonged 29-38 yrs. More than fifty percent patients were aged 59 yrs and above. On the other hand, in hemorrhagic stroke no patients were found within 18-28 yrs age group 8.33% patients were found withi 29-38 yrs age and more than fifty percent patients were 59 yrs and above. The difference between age group and type of stroke was not significant statistically. Male Female ratio was 1:1.14. Mean Total Cholesterol, HDL, Triglyceride, LDL were found in Ischemic stroke 199.60 ± 58.18, 39.59 ± 11.87, 163.09 ± 70.29 and 135.20 ± 54.99 respectively. On the other hand in hemorrhagic stroke, mean Total Cholesterol, HDL, Triglyceride, and LDL were 200.26 ± 45.63, 45.66 ± 20.03, 157.56 ± 85.98 and 126.94 ± 38.38 respectively. The differences between type of stroke and HDL were significant statistically. Mean total Cholesterol, HDL, Triglyceride and LDL in case of male were 190.14 ± 41.84, 41.04± 15.20, 156.21± 79.772 and 119.47± 31.84 respectively. On the other hand, mean total Cholesterol, HDL, Triglyceride and LDL 208.79 ± 60.394, 43.63±17.668, 160.74± 76.042 and 138.65 ±52.74 were found in females. The differences between total cholesterol and LDL level with gender were significant statistically. Mean total Cholesterol, HDL, Triglyceride and LDL in ischemic stroke with males were 184.93 ± 35.59, 39.30± 12.65, 145.14±58.61 and 117.53±26.53 mg/dl respectively. On the other hand, mean total Cholesterol, HDL, Triglyceride and LDL in females 208.42 ± 70.18, 39.51±9.58, 171.98±69.94 and 138.22 ±63.25mg/dl respectively. Serum lipid level with gender in Ischemic stroke showed that Total Cholesterol, Triglyceride, LDL has significant difference whereas HDL had non-significant difference. Mean total Cholesterol, HDL, Triglyceride and LDL in hemorrhagic stroke with males were 191.15 ±49.78, 43.32±15.66, 166.07±95.55 and 120.80±36.96 mg/dl respectively. On the other hand, mean total Cholesterol, HDL, Triglyceride and LDL in females 204.61 ±45.61,48.66±22.41 , 145.88±76.87 and 129.41± 41.30mg/dl respectively. There was no significant difference found during comparison of serum lipid level with gender in hemorrhagic stroke.*

Conclusion: *HDL level is significantly higher in hemorrhagic stroke than ischemic. Females had significantly higher total cholesterol and LDL level than male. During comparison of lipid profile with gender in ischemic stroke, lipid level (TC, TG and LDL) was significantly higher in female except HDL. On the other hand, there was no significant differences of lipid profile with gender in hemorrhagic stroke. It can be concluded that the association between lipid proûle and acute stroke varies with gender.*

Keywords: *Stroke, Gender Variation, Lipid Profile*

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Introduction

The World Health Organization (WHO) definition of stroke is: "rapidly developing clinical signs of focal (or global) disturbance of cerebral function, with symptoms lasting 24 hours or longer or leading to death, with no apparent cause other than of vascular origin" and the pathological background for stroke may either be ischemic or hemorrhagic disturbances of the cerebral blood circulation[1].

Stroke is one of the major global health problems. It is the leading cause of adult disability. Mortality from strokes is the second leading cause worldwide[2]. The scientific community recognizes the association between blood lipids levels and risk of cardiovascular disease[3]. Strong association has been found between high levels of serum cholesterol – especially of low-density lipoprotein (LDL) cholesterol – and the development of atherosclerosis, while elevated levels of high-density lipoprotein (HDL) cholesterol seem to play a protective role[3]. Various studies have been done on dyslipidemias and the findings indicate that dyslipidemia is prevalent worldwide, and places an enormous burden on the health care system. The metabolic consequences associated with changes in diet and lifestyle has increased the number of hyperlipidemic individuals who are at risk of a number of adverse effects such as stroke. The relationship of serum lipids and lipoproteins with cerebrovascular disease are being studied along with many other risk factors as in coronary heart disease [4] . Several clinical trials showed an association between high concentrations of serum cholesterol and ischaemic stroke[5]. On the other hand, case-control studies of stroke which examined cholesterol as a risk factor have generally produced negative findings and prospective studies have generally failed to show a direct and strong association[6]. Some demonstrated an inverse relation between total cholesterol and death from haemorrhagic stroke[7].

Serum lipid levels have an established effect on short term mortality due to strokes[8]. It is important to evaluate the difference in serum lipid levels in subtypes of strokes in both genders to guide lipid-lowering therapy which can reduce incidence of stroke and related mortality by adapting primary and secondary preventivemeasures[9]. The incidence and mortality for stroke is higher in different parts of the world and the prevalence is increasing due to increasing incidence of hypertension and poor management of cases. Several studies have shown gender differences in risk factor profile and there is now increasing evidence that gender, not only influences stroke presentation and severity but also the choice and response to therapy. Studies have shown that females are less likely to be treated with thrombolytic and it has been recognized that the efficacy of intravenous thrombolysis may be higher in females than males. Males have a higher incidence of strokes, but the absolute burden of stroke is greater in females, and is likely to rise. The reasons for the gender differences is multifactorial and a subject for many researches. In resource poor setting like ours, gender related issues in stroke have not been characterized, and appreciation of these differences will help in the management of women with stroke and improve their quality of life[10].

After several years of research the medical science has come up with an array of risk factors and various pathophysiological mechanisms by which the stroke is caused. The nontraditional factors are like increased plasma fibrinogen, hyperhomocysteinemia, high level of lipoprotein. This has helped to identify the potential candidate for stroke among the patients just by looking at the presence of the risk factors in the blood and to employ the methods of modifying or eliminating these risk factors and thereby to prevent the incidence of stroke in our patients [11]. It is important to evaluate the difference in serum lipid levels in both the genders of strokes to guide lipid lowering therapy which can reduce incidence of stroke and related mortality by adapting primary and secondary preventive measures among the stroke patients [12].

Epidemiological studies have shown that there are sex differences in the distribution of traditional risk factors of stroke, its course and long-term effects [13]. Classification systems help to categorize the causes of stroke, knowing what causes stroke is vitally important for planning secondary prevention [14]. Women are more often found to have cardiogenic stroke; men more often suffer from thromboembolic stroke associated with atherosclerosis in large arteries[15].

A different profile of modifiable risk factors of stroke underlies stroke prevalence rates, its course and post-stroke disability. These elements differ in both men and women. Determining the significance of each risk factor of stroke is of great value for both the choice of treatment and its prognosis. This is because the interaction between certain risk factors of stroke has an impact not only on the occurrence of cerebral ischemia, but also on the results of the treatment applied. In all probability, the higher effectiveness of thrombolysis in women is associated with the presence of fibrin-rich cardiogenic emboli as well as higher endogenous fibrin lytic activity[16].

Stroke is also a leading cause of long-term disability in the United States and reported that women are 41% more likely to have worse disability following stroke than men. Moreover, some 60% of stroke deathsin2008occurred among women[17]. Stroke incidences also differ by sex, exhibiting the classical "female paradox" phenomenon; while the incidence of stroke is greater among men, women suffer worse outcomes from the disease [18]. Additional studies have also identified differences not only in the risk profiles between the sexes, but also between racial/ethnic groups[19].

In considering sex differences in the incidence and mortality from stroke, some studies have reported a correlation between menopause, with its concomitant changes in arterial structure, and the worsening of biochemical risk factors for atherosclerosis[20]. Others point to an increased prevalence of metabolic syndromes among menopausal women as responsible for the disparity in stroke between the sexes. Increasing evidence implicates dyslipidemia and elevated triglycerides and total cholesterol levels as important but modifiable risk factors for stroke[21].

Stroke is the leading cause of death and disability both in developed and developing countries. Serum lipid levels have an established effect on mortality & morbidity of stroke. In different studies in abroad, female stroke patients had an increase in lipid level when compared to males. It is important to evaluate the difference in serum lipid level in both the genders of acute strokes to guide lipid lowering therapy which can reduce stroke related mortality and morbidity by adapting primary and secondary preventive measures. Dyslipidemia is one of the most important risk factors which contribute to the majority of cases of stroke. There is paucity of data regarding such study in our country. So this study was undertaken to find out the association of lipid profile in acute stroke patients with gender variations that may help the government to develop national guidelines for our patients. It is hypothesized that Serum lipid profile may vary according to type of stroke

Materials and Patients

It was a observational cross sectional analytical study having purposive sampling technique carried out in the inpatient department of Neurology and Medicine of Sir Salimullah Medical College Mitford Hospital, Dhaka from July 2015 to June 2016. 180 patients aged > 18yrs with clinically and radiologically proved acute stroke were recruited. Selection criteria included newly diagnosed stroke patients presented within 72 hours, confirmation of diagnosis by CT scan of head & MRI of brain, Patients or their attendants who gave consent for the study. Patient's age <18 yrs, imaging study that showed different diagnosis e.g. ICSOL, demyelinating disease, AVM, extra and subdural hematoma, subarachnoid hemorrhage, patients who had systemic diseases like hepatitis, renal failure, hypothyroidism and systemic malignancy that interfere with lipid metabolism, the subjects who used any medications having effects on serum lipid profile such as statins, steroids and oral contraceptives etc, old and recurrent strokes, patients who refused to be included in the study were excluded. Data were collected by using a preformed and pretested semi structured data collection sheet through face to face interview. Some data were collected from biochemical and imaging report of hospital records. Then data were entered into the computer with the help of software SPSS 16. Mean differences of lipid profile with acute stroke was done by unpaired t test. Comparison of lipid profile with gender variation was also done by unpaired t test. Association between age group and type of stroke was done by chi-square test. Significance was assessed at 5 % level of significance. The study was approved by Institutional Ethics Committee of SSMC.

Results

Table-I

Distribution of study population by types of stroke (n=180).

Type of Stroke	Frequency (n)	Percentage (%)
Ischemic Stroke	96	53.30%
Hemorrhagic Stroke	84	46.70%
Total	180	100.00%

Among study patients, 53.30% patients were Ischemic stroke and hemorrhagic were 46.70%.

Among ischemic stroke, 2.08% patients were 18-28 yrs age group, 5.21% were 29-38yrs. More than fifty percent patients were within 59 and above yrs. On the other hand, among hemorrhagic stroke no patients were found 18-28 yrs age group, 8.33% patients were found 29-38 yrs age, more than fifty percent patients were 59 yrs and above. The difference between age group and type of stroke was not significant statistically.

Table-II

Distribution of study population by age groups (n=180).

Age group (yrs.)	Type stroke		P value
	Ischemic Stroke n (%)	Hemorrhagic Stroke n (%)	
18-28	2 (2.08%)	0(0.00%)	0.62 ns
29-38	5(5.21%)	7(8.33%)	
39-48	10(10.42%)	7(8.33%)	
49-58	24(25.00%)	21(25.00%)	
59 & above	55(57.29%)	49(58.33%)	
Total	96(100.00%)	84(100.00%)	

Table III

Mean age of study subjects according to gender and type of stroke (n=180).

Mean Age	Sex		Type of stroke	
	Male (n=84)	Female (96)	Ischemic (96)	Hemorrhagic (84)
(Mean ± SD)	58.99 ± 12.12	59.34 ±14.42	58.88 ± 13.65	59.52 ± 13.09
P value	.85 ns		.74 ns	

The unpaired t test showing difference between mean age with sex and type of stroke. These differences were not significant statistically**.**

Table-IV

Distribution of symptoms among acute ischemic and hemorrhagic stroke (n=180).

Presenting symptoms	Ischemic Stroke Present (n)	Hemorrhagic Stroke Present (n)
Hemiparesis	80	45
Dysarthria	21	15
Facial asymmetry	12	8
Dysphasia	17	13
Visual Disturbance	8	5
Altered consciousness	9	25
Headache	6	19
Vomiting	4	16

Table-IV shows the distribution of study population by presenting symptoms in ischemic stroke and hemorrhagic stroke patients.

Table-V

Mean difference of lipid level among acute stroke patients (n=180).

Type of stroke	Total Cholesterol	HDL	Triglyceride	LDL
IschemicStroke (n=96)	199.60 ± 58.18	39.59 ± 11.87	163.09 ± 70.29	135.20 ± 54.99
Hemorrhagic Stroke (n=84)	200.26 ± 45.63	45.66 ± 20.03	157.56 ± 85.98	126.94 ± 38.38
P value	.93 ns	.01 s	.63 ns	.25 ns

Table V showed no statistical difference between two strokes in respect of serum total Cholesterol, Triglyceride, LDL except HDL which was significantly low in ischaemic stroke than haemorrhagic.

Table-VI

Lipidaemic status of study subjects according to gender(n=180).

Sex	Total Cholesterol	HDL	Triglyceride	LDL
Male(n=84)	190.14 ± 41.84	41.04± 15.20	156.21± 79.77	119.47± 31.84
Female(n=96)	208.79 ± 60.39	43.63±17.66	160.74± 76.042	138.65 ±52.74
P value	.02s	.31 ^{ns}	.71^{ns}.01s	

Table-VI showed that, mean serum total Cholesterol, and LDL were significantly more in female than male. However, serum HDL, Triglyceride levels were almost similar in both gender.

Table-VII

Mean difference of lipid level in Ischemic stroke (n=96)

Sex	Total Cholesterol (mg/dl)	HDL (mg/dl)	Triglyceride (mg/dl)	LDL (mg/dl)
Male (n=43)	184.93 ± 35.59	39.30± 12.65	145.14± 58.61	117.53± 26.53
Female (n=53)	208.42 ± 70.18	39.51±9.58	171.98± 69.94	138.22 ± 63.25
P value	.04 ^{S}	.92 ^{ns}	.04^{s}	.04^{S}

Table- VIII showedmean differences of serum lipid level with gender in Ischemic stroke. Total Cholesterol, Triglyceride, LDL showed significant difference with gender whereas HDL had non-significant difference.

Table-VIII

Mean difference of lipid level in hemorrhagic stroke (n=84)

Sex	Total Cholesterol (mg/dl)	HDL (mg/dl)	Triglyceride (mg/dl)	LDL (mg/dl)
Male (n=41)	191.15 ± 49.78	43.32± 15.66	166.07± 95.55	120.80± 36.96
Female (n=43)	204.61± 45.61	48.66±22.41	145.88± 76.87	129.41 ± 41.30
P value	.20 ns	.21 ns	.28 ns	.31 ns

Table-VIII showedmean difference of serum lipid level with gender in hemorrhagicstroke.
Total Cholesterol, HDL, Triglyceride and LDL showed non-significant difference with gender.

Discussion

Stroke is the leading cause of adult disability and is the second commonest cause of death worldwide. A cross sectional comparative study was conducted to see the lipid profile status among acute stroke patients with gender variations.

Regarding distribution of study population according to type of stroke, 53.30% patients had ischemic stroke and hemorrhagic stroke were found in 46.70% of patients in the present study. It was similar with another study by Khan et al[22]. In that study, based on CT Brain findings of 370 stroke patients, the frequency of ischemic stroke was 190 (51.4%) and hemorrhagic stroke was 180 (48.6%) respectively. But in contrary, in some other studies higher number of hemorrhagic stroke (48.6%) were found in respect to ischemic stroke (22-31%) [23,7,8.]

In this study, among ischemic stroke, 2.08% patients were in 18-28 yrs of age group and 5.21% were in 29-38yrs of age group. More than fifty percent patients were aged 59 yrs and above. On the other hand, among hemorrhagic stroke no patients were found in 18-28 yrs of age group, 8.33% patients were found in 29-38 yrs of age group whereas more than fifty percent patients were found in the age group of 59 yrs and above. The difference between age group and type of stroke was not significant statistically. Advanced age is one of the most significant stroke risk factors. Between 1990 and 2010, globally two-thirds of strokes occurred in those over the age of 65[24]. Peak incidence of stroke (32.4%) involved patients of 59 years and above in our study which is comparable with findings of 61-70 years of most vulnerable age group for stroke in another study[22].Though it is observed in many studies that hemorrhagic strokes are the more common than ischemic strokes in young age, 60% strokes were ischemic found in older population[25].

In this study, the independent t test was done to show difference between mean age with sex and type of stroke. These differences were found statistically non-significant**.** In our study, mean age of the male participants was found 58.99 ± 12.12 years and that of female participants was 59.34 ±14.42 years. Mean age of ischemic stroke patients was 58.88 ± 13.65 years and that of hemorrhagic stroke patients was 59.52 ± 13.09 years. In the study by Anbuselvan et al.[9], the mean age of presentation of patients with stroke was 54.2±32 years of both the genders. In one study, mean age of stroke patients for both males and females was 58.1±15.2 years which was slightly lower than those quoted in some other studies[8,26,12, 11,10.]

In the present study, male were 47.2% and female were 52.8%. But in one study by Khan et al[22]found 229 (61.9%) were females and 141 (38.1%) males patients which was similar to this study. But gender variation was very much significant with slight male predominance found in some other studies. Other studies were done by Murray et al[5]and Noma et al[25] pointed that, 74% were males and 26% were females which was contrary to our study findings.

In this study, half of the studied patient were housewives (51.67%) followed by businessman (23.33%) and teachers were (10.00%). Unemployed and day laborer were 7.78% and 7.22% respectively.Another study found businessmen were 14.4%, house wife were 51.4% and only 4.4% were farmer [8]. It was more or less similar with the present study.

Among study population, 79.2% and 67.8% patients of ischemic stroke and hemorrhagic stroke respectively had primary education. Secondary education was completed by 11.5% of ischemic stroke patients and 19.0% of hemorrhagic stroke patients. On the other hand, 7.3% of ischaemic stroke patients and 4.8% of hemorrhagic stroke patients were graduate and above. These associations were significant statistically. In one study by Watila et al[10] shown that primary education had completed 41.7.0% cases; secondary education completed 35.0% cases. Graduate and above graduate were 18.3% and 5.0% respectively.

The present study showed that the mean of total Cholesterol, HDL, Triglyceride, LDL were found in ischemic stroke 199.60 ± 58.18, 39.59 ± 11.87, 163.09 ± 70.29 and 135.20 ± 54.99 mg/dl respectively. On the other hand in hemorrhagic stroke, the mean of total Cholesterol, HDL, Triglyceride, and LDL were 200.26 ± 45.63, 45.66 ± 20.03, 157.56 ± 85.98 and 126.94 ± 38.38 mg/dl respectively. The differences between type of stroke and HDL were significant statistically. Mahmood et al[6] found in their study that 100 patients of haemorrhagic stroke showed a high serum total cholesterol and serum triglyceride in 5 patients each with a mean value of 3.92±0.79 mmol/L and 1.27±0.31 mmol/L

respectively. Serum LDL cholesterol was increased in 9 patients with mean level of 4.46±0.36 mmol/L. Serum HDL-cholesterol was below the normal reference range in 4 patients with haemorrhagic stroke having a mean value of 1.03±0.16 mmol/L.

In present study, mean total Cholesterol, HDL, Triglyceride and LDL in case of male were 190.14 ± 41.84, 41.04± 15.20, 156.21± 79.772 and 119.47± 31.84 mg/dl respectively. On the other hand, mean total Cholesterol, HDL, Triglyceride and LDL 208.79 ± 60.394, 43.63±17.668, 160.74± 76.042 and 138.65 ±52.74 mg/dl were found in females. The differences between serum total cholesterol and LDL level with gender were significant statistically. On the other hand serum HDL & TG found statistically non-significant. In one study it was found that total serum cholesterol was high in female 210±32.92 mg/dl when compared to male 190±25.82 mg/dl which is statistically significant. Total triglycerides were increased in female when compared to male was around 213±23.92, 197±58.43 mg/dl which is statistically significant. HDL cholesterol level was very low in female when compared to male which is also statistically significant. The values were around 23.72±12.06, 37.43±7.18 mg/dl. LDL cholesterol level was found to be more in female when compared to male. The values are 141.81±31.89, 123.92±33.73 mg/dl[9].

In this study, serum total Cholesterol, Triglyceride, LDL showed significant difference with gender in ischemic stroke patients whereas serum HDL had non-significant difference.The present study also revealed that there was no significant difference of serum total Cholesterol, HDL, Triglyceride and LDL with gender in hemorrhagicstroke.

Conclusion

HDL level is significantly higher in hemorrhagic stroke than ischemic. Females had significantly higher total cholesterol and LDL level than male. In ischemic stroke, lipid level (TC, TG and LDL) was significantly higher in female except HDL. On the other hand, there were no significant differences of lipid profile with gender in hemorrhagic stroke. It can be concluded that the association between lipid proûle and acute stroke varies with gender. So, gender is a determining factor when the relationship between lipid profile and stroke prognosis is evaluated.

Recommendation

Stroke cases in Bangladesh have signiûcantly increased in number over the past decades. Adverse outcomes from these cases are also rising as stroke poses long-term economic impacts on individuals, families and the country as well. In our study, we found that serum lipid is an important risk factor of developing stroke more in female than male. So our recommendation is to put more emphasis on healthcare services to create mass awareness among people to prevent stroke occurrence, recurrence and ensure better prognosis. Regular monitoring of lipid profile among dyslipidemic healthy individuals specially female and taking primary preventive measures may decrease the risk of developing acute stroke.

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Non-Descent Vaginal Hysterectomy: An Effective Approach to Treat Uncomplicated Patients

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Abstract

Background: *Vaginal hysterectomy has been considered a valid alternative to the abdominal approach and studies have shown it to be associated with fewer complications also with a shorter recovery period and hospital stay. Objective of the present study was to see the outcome of non-descent vaginal hysterectomy in non-prolapsed uterus.*

Method: *This was a across sectional study, carried out on 75 patients admitted to in the Department of Gynae and Obs of Sir Salimullah Medical College & Mitford Hospital from July 2011 to June 2014.*

Results: *Majority of patients were in fifth decade and mean age was 44.84±4.41years.Uterus size was 8-10 wks in most of the cases. Regarding indication, DUB was found in 40% patients, fibroid uterus in 30%. Mean operation time was 50.8±5.89 minutes. Average blood loss was <100ml. Mean weight of uterus was found 212.27±63.01 gm. Excessive hemorrhage were found in 2 patients, ureteric injury in 1 patient, bladder injury in 2 patients. There was no postoperative complications except UTI in only 1 patient and pelvic abscess in 2 patients. Average hospital stay was 2.87±0.63 days.*

Conclusion: *Non descent vaginal hysterectomy is a more convenient procedure for patients. Operation time, postoperative complications and hospital stay are less. Patients can resume work earlier. Also, it is reasonably less expensive than Laparoscopic assisted vaginal hysterectomy (LAVH).*

Keywords: *Non-Descent Vaginal Hysterectomy, Uncomplicated Patients, Treatment*

(Sir Salimullah Med Coll J 2017; 25: 60-64)

Introduction:

Hysterectomy is the most common major gynaecological surgical procedure. It can be done by abdominal or vaginal route, or with laparoscopic assistance[1]. Vaginal hysterectomy has been considered a valid alternative to the abdominal approach and studies have shown it to be associated with fewer complications, a shorter recovery period and shorter hospital stay, compared with abdominal procedure[2]. It is preferred in high risk cases like obesity, and is cosmetic, as there is no hysterectomy scar[3]. The operation is quick and no advanced equipments are needed. In addition, the operation can be performed in women with enlarged uterus, nulliparity or a history of pelvic surgery[4,5,6,7]. The need for oophorectomy should not be considered a contraindication[8]

The main indication for vaginal hysterectomy remains the treatment of utero-vaginal prolapse, for which the vaginal route is normally used. But these indications account for approx. 10% of total cases[8]. Uterine fibroids and menstrual problems, the most common indications for surgery, are managed by abdominal hysterectomy in the majority of cases[9]

The reasons that indicate the vaginal route is preferential for benign diseases like fibroid uterus, DUB, Adenomyosis and PID. This procedure needs not make an incision in the abdominal wall, which may produce some consequences like pain, sepsis, adhesions, laparocele scars, manipulation of bowel. The vaginal procedure causes early return of bowel function, a shorter operative time, less risk of ureteric and intestinal harm, less surgical bleeding, the possibility of applying local/ regional anesthesia,

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less pain and early discharge. It is possible to convert the procedure to abdominal route at any time[4].

Laparoscopic assisted vaginal hysterectomy (LAVH) is associated with higher cost[1] and a longer duration of operation, and involves a large number of specially trained[10] personnel. A usual limitation in a non-descent uterus is its size, but now with larger sizes, hysterectomy can be facilitated by bisection, myomectomy , wedge debulking and intramyometrial coring, which is also known as morcellation[11]

Regarding non-closure of vault, Harold Ellis, in 1980, showed that closing of the peritoneum at the end of abdominal surgery is not necessary. The thin peritoneum, unlike skin, cannot be adapted by placing its ends together[12]. Vascular bridges over peritoneal sutures are a focus for ischaemia and adhesions. When peritoneum is left open, the coelomic cells will produce a new peritoneum[13]. Indeed,practice of leaving the peritoneum open in a caesarean section proved to cause fewer adhesions than when it was closed. It was also shown that the peritoneum closure was not necessary to vaginal hysterectomy[14] Another advantage of leaving the peritoneum open is that in addition to drainage by blood and lymph channels, the fluid/blood can be drained out through the open peritoneum[15].

Non closure of the vault is the preferable method. In non closure, securing of the vaginal angles is necessary as they are the most notorious oozers in the post operative period. McCall culdoplast[16] at the time of vaginal hysterectomy is a recommended measure to prevent enterocele formation. Suturing the cardinal and uterosacral ligaments to the vaginal cuff at the time of hysterectomy is a recommended measure to prevent vault prolapse .

This study was done to asses the effectiveness of nondescent vaginal hysterectomy over TAH OR LAVH.

Materials and Methods

This was a cross sectional study done in the Department of Obstetrics and Gynaecology, SSMC and Mitford hospital from July 2011 to June 2014. 75 patients with benign gynaecological disorders (fibroid, DUB, adenomyosis, PID, benign ovarian cyst) with Uterus size <14 wks having adequate uterine mobility and laxity of pelvic muscles were included in this study. Patients having uterine prolapse, endometriosis, complex adnexal mass and suspicion of malignancy were excluded.Main Outcome Measures were -Indication for Hysterectomy, estimated Blood Loss during operation (ml), and complications (Per operative and post operative), Hospital stay (day).

Procedure: Informed consent was taken. For better exposure, sutuiring of both the labia were done. Circumferential incision was given around the cervical lip. Bladder was pushed up anteriorly. Then clamp was given step by step. Bisection of uterus or myomectomy or Morcellation or coring which was appropriate for individual case were done to reduce the size of the uterus and to bring out the uterus through vaginal route. Bisection of uterus was done along the anterior-posterior direction towards the fundus. (Complete bisection allows one half of the uterus to be delivered along the vagina). Myomectomy was done in some cases with bisection of uterus.Smaller myomas were removed in one piece, larger ones were removed by morcellation with fragments. Morcellation was used in those cases where no further descent of the uterus occurs despite bisection or myomectomy

Observation and Results

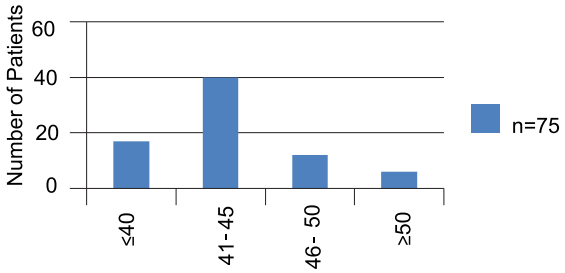

Fig.1: *Age distribution of Study Patients*

Total 75 patients were included in study. Mean age of patients was 44.84±4.4 years.

Table I

History of Previous Pelvic Surgery (n=75)

	n	%
Yes	14	18.6
No	61	81.4%

Table II
Parity (n=75)

Parity	n	%
Nulliparous	0	0
Multiparous (2-5)	67	89.3
Grand Multiparous (6-8)	8	10.7

Mean±SD=3.8±1.5

Table III
Size of Uterus (n=75)

	N	%
Upto 8 wks	10	13.3
8-10 wks	51	68.0
10-12 wks	12	16.0
12-14 wks	2	26.7

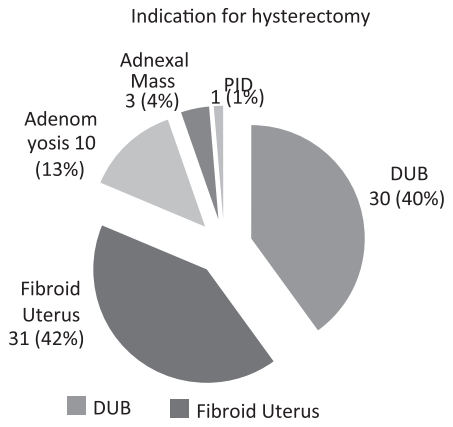

Fig. 2: *Distribution of Study Patients according to Indication of Hysterectomy*

Most common indication of NDVH was fibroid uterus (42%)

Table IV
Per Operative Findings (n=75)

Nature of Anaesthesia	Regional (S/A) 74		General 1 (following SA)
Operation	Mean ± SD	Range	
Time	50.8± 5.9	40-100 min	
Blood loss	<100 ml	>100 ml	Mean ± SD
	69 pts (92%)	6 pts (8%)	68.4 ±12.5
Adhesion Present	Yes5(7%)	No70(93%)	

Table V
Post operative measurement of uterus (weight in grams); n=75

Uterus Size	N	%
100-200	54	72.0
201-300	13	17.3
>300	8	10.7

Mean±SD=212.27±63.01

Table VI
Per operative complications (n=75)

Complication	N	%
Hemorrhage	2	2.7
Bladder Injury	2	2.7
Ureteric Injury	1	1.3
No complication	70	93.3

Table VII
Post operative complications (n=75)

Post operative complication	N	%
Follow up After 15 days		
Pelvic Abscesses	2	2.7
UTI	1	1
Follow-up after 45 days		
Complication	0	0
No complication	75	100

Table VIII
Need for Blood Transfusion (n=75)

Blood Transfusion Needed	N	%
Yes	18	24
No	57	76

Table IX
Duration of Post operative hospital stay (n=75)

Hospital Stay (days)	N	%
2-3	69	92
4-7	6	8
Mean±SD	2.87±0.67	

Result of this study was comparable with Dicker et al (1982)[2], which was a prospective, multicenteric observational study , conducted to assess the comparative risks of complication among

Table X
Histopathology Report (n=75)

Histopathological diagnosis	N	%
Leiomyoma of Uterus	30	40
DUB Secretory Phase	18	24
Proliferative Phase	6	8
Adenomyosis	12	16
Chronic cervicitis	6	8
CIN-II	3	4

Discussion

In this study, almost 3/4th of the patients had 8-10 weeks uterus size. Fibroid uterus and DUB were more common indications for hysterectomy. Average blood loss was 68.4±12.5 ml. Blood transfusion were needed in 24% patients and duration of postoperative hospital stay were 2-3 days, (mean is 2.87±0.07 days). Vault was kept open where there was adhesion. Bladder injury occurred in 2 patients during separation of bladder from uterus, with history of previous pelvic surgery. Ureteric injury occurred in 1 patient who possessed a very large myomatous polyp. Pelvic abscess and UTI were observed in 2 patients, on the 15th post-op day. However, no complications were found after 45th post-operative day. Requirement for analgesia was minimum.

Women undergoing hysterectomy by the abdominal and vaginal approaches . 1,851 women from 9 institutions were included (1978-1981).In these women vaginal hysterectomy was associated with more unintended major surgical procedures but less febrile morbidity, bleeding requiring transfusion , hospitalization, and conva-lescence than abdominal hysterectomy. Miskry and Magos (2003)[3] determined under control conditions, a double –blind randomized trial. 36 women with dysfunctional uterine bleeding, uterine fibroids or pelvic pain scheduled for hysterectomy, or randomized to abdominal or vaginal hysterectomy. The primary outcome measure was the duration of hospital stay. Secondary outcome measures included analgesia, postoperative complications. Vaginal hysterectomy was associated with reduction in hospital stay compared to abdominal hysterectomy (median stay 3 days vs. 5 days, p=0.01). In NDVH there is reduced analgesic requirement (mean=75.4 mg vs. 131.4 mg morphine, p=0.002), shorter need for IV hydration (mean=25.3 h vs. 32.7 h, p=0.05), and faster return of bowel action (median=3 days vs. 4 days, p=0.002). They also returned to normal domestic activities (mean 4.6 wks vs. 8.5 wks, p=0.01) and completedrecoverery (mean 7.9 wks vs. 16.9 wks, p=0.008) more quickly. The study of Benassi et al (2002)[4],have shown weights ranged from 200g-1300g. For enlarged uteri, NDVH were performed with the use of volume reduction techniques – intramyometrial coring, corporal bisection, and morcellation. Same was true for the current study where the weight of this resected uterus 100-400 gm. Surgical bleeding was not significantly different between the two groups. Post-operative requirement of analgesia (86% vs. 66%, p<0.05), incidence of post-op fever (30.5% vs. 16.5%, p<0.05) in the abdominal group against the vaginal group. Significant advantages of vaginal hysterectomy was a reduction in hospital stay (3 days vs. 4 days, p<0.001) and cost. Hwang et al (2002) compared peri-op morbidity in patients undergoing either vaginal, laparoscopic assisted, or abdominal hysterectomy. LAVH group had significantly longer operative times than abdominal and vaginal hysterectomy groups (109±22 min, 98±16min, and 74±22 min, respectively, p<0.001). Blood loss for VH was significantly lower than for either abdominal or LAVH (215±34 ml, 293±182 ml, 343±28 ml, respectively, p=0.04). Unger (1999) compared the surgical outcome of women with moderately enlarged uteri undergoing VH, with women of normal uteri undergoing VH. There was a linear relationship between uterine weight and operative time: operative time=47.156±0.056, uterine weight (r=0.20, P=0.06). Vaginal morcellation of the uterus was needed in 80.0%.

Conclusion

Non descent vaginal hysterectomy has been observed to be an excellent choice for uncomplicated patients, regarding cost-effectiveness, hospital stay, requirement for analgesia and post-op complications. Chance of

incisional hernia is also nil. Early recovery, less pain and early resumption to domestic and other regular work. These results should lead to the choice of vaginal hysterectomy being a valid alternative to abdominal hysterectomy, even for enlarged uteri. Use of highly expensive advanced laparoscopic instrument is not required. Only a single thing is needed e.g surgical expertise.

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Magnetic Resonance Imaging Evaluation in The Diagnosis of Spinal Tuberculosis With Histopathological Comparison

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Abstract

Magnetic Resonance Imaging offers superior contrast resolution including greater sensitivity for the diagnosis of spinal Tuberculosis. This cross sectional study was carried out in the department of Radiology & Imaging, Sir Salimullah Medical College, Dhaka during the period of July'2014 to June'2016 to find out the Role of MRI in the diagnosis of tuberculous spondylitis. Histopathological comparison was done for validity tests by calculating sensitivity, specificity, accuracy, positive predictive value and negative predictive value. 45 patients were included in the present study. Among those patients, male : female ratio was 1.15:1. The age range was 10 to 75 years and mean age (±SD) was 37.7(±18.6) years. Out of 45 patients 33 were diagnosed as tuberculous spondylitis by MRI and among them 31 were confirmed by histopathological evaluation.Two cases were diagnosed as tuberculuos spondylitis by MRI but not confirmed by histopathological findings. Out of 12 cases of non- tuberculous spondylitis diagnosed by MRI 1 was confirmed as tuberculous and 11 were non-tuberculous spondylitis by histopathological findings. In the present study Sensitivity of MRI in the diagnosis of tuberculous spondylitis was 96.87%, specificity 84.61%, positive predictive value 93.93%, negative predictive value 91.66% and accuracy 93.33%.

Keywords: *Magnetic Resonance Imaging, Spinal Tuberculosis, Diagnosis*

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Introduction

Tuberculous spondylitis (TBS) has a worldwide distribution with a greater prevalence in developing countries. The spine represents the most common site of osseous involvement accounting for 5–15% of all patients with tuberculosis (TB). This disease is seen in developed countries because of its association with AIDS epidemic. Skeletal involvement has been noted in nearly 60% of TB cases with HIV. TBS remains a serious clinical problem because of its high morbidity. Changing patterns of disease suggest that this condition is increasing in frequency in developed countries. Diagnosis of TBS should be considered in the differential diagnosis of lytic lesions of the vertebral body/appendages, especially in the presence of a paravertebral soft-tissue mass.[1]

The principal infection causing death in the world is tuberculosis (TB). It is estimated two billion people are infected with TB, who can develop TBS. The risk of developing the disease depends on the patient (host characteristics) and the geographical precedence because of the different incidence of TB in each country. In a study made in the United Kingdom, the risk in the white population increases with age from 0.8 to 10.9/100,000, whereas, the risk in people from the Indian subcontinent increases with age from 28.7 to 405.7/ 100,000; thus, they realized that anyone of any ethnic group has an increased risk of 10–20 times.[2]

Extrapulmonary tuberculosis affects 15–20% of patients with TB. The most common are pleural and lymphatic disease. Skeletal TB occurs in 10%

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of extrapulmonary manifestations of which spinal TB accounts for approximately 50%. This gives an incidence of between one and two percent for osteoarticular TB and half to one percent for spinal TB.[3]

Spinal tuberculosis is the most common and the most serious form of tuberculous lesions in the skeleton. A total of 101 countries reported notifications of new cases of extrapulmonary TB (these countries accounted for 50% of total notifications of extrapulmonary TB). There were 195,002 male cases and 180,310 female cases giving a male:female ratio of 1:1. Among new extrapulmonary patients, this is much lower than the ratio for smear positive TB patients. Understanding the reasons for this difference and the logistical implications requires further investigation and research. The resurgence of TB can be expected to be associated with a concomitant increase in the incidence of extra-pulmonary TB including Pott's disease. The incidence of patients with spinal infection has been reported to have increased.[4]

Tuberculosis demonstrates a variety of clinical and radiological findings and shows a known propensity for dissemination from its primary site; therefore, it can mimic a number of disorders. Tubercular spinal epidural abscess is usually secondary to tubercular spondylitis, but may develop by haematogeneous spread from any primary focus.[5]

Most of the patient of Tuberculous spondylitis present with leg weakness, gibbus, back pain, palpable mass, numbness, incontinence, fever & stiffness.[6]

Tuberculous organisms localize first in the anterior aspect of the vertebral body near an intervertebral disc. The developing inflammatory process may erode the cortical bone, destroy the intervertebral disc & involve the adjacent vertebral body. Subligamentous spread &paraspinal extension of tuberculosis is a frequent finding. Abscess formation is commonly bilateral & small calcification are characteristic of tuberculosis. Healing of tuberculous spondylitis can lead to partial or complete fusion of vertebral bodies. The lower thoracic & upper lumbar spines are predilection sites for Tuberculosis.[7]

Tuberculosis has a propensity to spread along soft tissue planes, particularly anteriorly under the anterior longitudinal ligament, involving multiple vertebrae, in time giving the so called "aneurysmal syndrome" (scalloping of the anterior vertebral margins).[8]

Various Magnetic resonance imaging features are observed on non-contrast T1-Weighted image, T2-Weighted image and Short tau inversion recovery sequences followed by post-contrast T1W sequences and degree of cord compression was correlated with neurological deficit. The characteristic radiological features on MRI along with response to treatment were considered diagnostic. Lower thoracic and lumbar vertebrae are the most common sites of spinal TB followed by middle thoracic and cervical vertebrae. Vertebral body wedge collapse, compression fracture and combination of both were evaluated. Prevertebral and paravertebral abscesses and epidural phlegmon are seen more on MRI. Magnetic resonance imaging is particularly useful in demonstrating the morphologic extent of soft tissue spread, especially after Gd-DTPA injection. Thin rim enhancement around intra osseous and paraspinal soft tissue abscesses has not been demonstrated in other spinal infections. So MRI is the best diagnostic modality for spinal TB. It provides the diagnosis of spinal TB earlier than conventional methods, offering the benefits of earlier detection and treatment.[9]

As spinal tuberculosis progresses slowly, insidiously an early diagnosis before abscess formation and disc alteration is difficult and it commonly presents at an advanced stage. The management and follow-up is complicated by a lack of guidance. So appropriate use and interpretation of spinal magnetic resonance studies (MR) should be confirmed.[10]

Differentiation between non tuberculous spondylitis (NTS) and tuberculous (TS) spondylitis is essential to decide for the appropriate therapeutic regimen. The aim of this study was to compare the strength of MRI diagnostic characteristics of tuberculous spondylitis with histopathology.[11]

The prevalence of spinal tuberculosis is increasing day by day in the developed and developing country including Bangladesh. Delayed diagnosis of spinal tuberculosis causes different type of deformity and

life time sufferings of the patients. So we need to diagnose the patients earlier for better management & for reduction of their sufferings. As MRI is known to detect Tuberculous spondylitis earlier than any other modalities this study was undertaken to see the role of MRI in the evaluation of spinal TB. Study was designed to evaluate the diagnostic usefulness of MRI in the evaluation of Spinal Tuberculosis. Specific objective to diagnose Spinal Tuberculosis by the MRI findings, compare the MRI diagnosis of Spinal Tuberculosis with that of histopathology and to find out the sensitivity, specificity, positive predictive value, negative value and accuracy of MRI in the evaluation of Spinal Tuberculosis.

Materials and Method

This was a cross sectional study conducted in the Department of Radiology and Imaging in Sir Salimullah Medical College, Dhaka from July 2014 to June 2016. A total 45 patients were included in this study after taking informed consent from the patient, who could fulfill the selection criteria as defined below from Neurosurgery of Sir Sallimullah Medical College, Dhaka, Dhaka Medical College &Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh.

Inclusion Criteria

All patients with clinical suspicion of Spinal TB.

Exclusion Criteria

1. Patients who were not willing to undergo FNAC.
2. Non availability of histopathological report.

MRI was carried out on 45 patients with 0.3 Tesla open MRI machine with slice thickness of 7mm and they were followed up to final diagnosis by histopathology. MRI and histopathological diagnosis were compared to find out the diagnostic performance in the spinal tuberculosis. Data were collected by using data sheet. All the collected data were arranged on a master chart and statistical analysis were done by computer software SPSS-16. The results were presented as text, table, figures, charts, diagram and the validity test was done.

Result

The following observations and results were found in this study. Among those patients, male: female ratio was 1.15:1. The age range was 10 to 75 years and mean age (±SD) was 37.7(±18.6) years. Distribution of patients according to MRI parameters is shown in Table-I. Most common site of involvement was thoracic 30 (66.66%). Most of the patients (66.66%) present with the involvement of 2 vertebrae.

Table I

Distribution of patients according to MRI parameters (n=45)

MRI features	Frequency	Percentage
Vertebral involvement		
1.Site of spinal involvement		
Cervical	02	04.44
Thoracic	30	66.66
Lumbar	13	28.88
Sacral	00	00
2.Number of vertebral involvement		
Single	08	17.77
Two	22	48.88
Three	12	26.66
More than three	03	06.66
3.End plate destruction		
Present	29	64.44
Absent	16	35.55
4.Disc involvement		
Present	40	88.88
Absent	05	11.11
5.Soft tissue involvement		
Margin of abscess wall after contrast administration		
Thin smooth wall	30	66.66
Thick irregular wall	15	33.33
Cord compression	21	46.66
PresentAbsent	24	53.33

In evaluation of spinal tuberculosis by MRI, 33 (73.33%) were diagnosed as tubercular spondylitis, 09 (20.00%) were pyogenic spondylitis & 03 (06.67%) were spinal metastasis. Similarly, in histopathologically 32 (71.11%) patients were diagnosed as tubercular spondylitis, 10 (22.22%) patients as pyogenic spondylitis & 03 (06.67%) patients as spinal metastasis. Comparison of MRI diagnosis with that of Histopathological diagnosis are shown in (Table-II). Sensitivity, specificity, positive predictive value, negative predictive value and accuracy of MRI in the diagnosis of spinal tuberculosis are shown in (Table-III).

Table II
Comparison of MRI diagnosis with that of Histopathological diagnosis (n=45)

MRI	Histopathological diagnosis		
	Positive	Negative	Total
Positive	31 (TP)	2 (FP)	33
Negative	1 (FN)	11 (TN)	12
Total	32(100)	13(100)	45(100)

Table III
Validity test of MRI in the diagnosis of tuberculous spondylitis (n=45)

Validity test	Percentage
Sensitivity	96,87
Specificity	84.61
PPV(Positive predictive value)	93.93
NPV(Negative predictive value)	91.66
Accuracy	93.33

Discussion

This cross sectional type of study was carried out with an aim to observe the role of MRI in the diagnosis of tubercular spine.Histopathological comparison was done for its validity test. A total number of 45 patients were included in this study.

In this study it was observed that most common age of presentation 11(24.44%) were within the 21-30 years. The mean age was 37.7±18.6 years with range from 10 to 75 years. Bajwa A[7] showed the mean age was 33 years and varied from 14-36. Khalequzzaman & Haque[12] found that the average age was 33.3 years.

In this study 24 (53.33%) patients were male and 21(46.66%) patient were female. The male female ratio was 1.14:1. Bajwa A[7] showed male:female ratio was 1.2:1.

It was observed that most common sites of involvement (66.66%) of the lesions were in the thoracic region. In the present study observation was that majority of the cases 22 (48.88%) involved two vertebrae, 12(26.66%) involved three vertebrae, 8(17.77%) involved single vertebra and 3(06.66%) involved more than three vertebrae. Weaver et al[10] showed same result in their study among 118 patients.

Here 38(84.44%) patients presented with vertebral collapse, 22(48.88%) with spinal deformity or kyphosis, altered marrow signal intensity was present in 45(100%), end plate destruction in 29(64.44%), disc involvement & signal intensity changes in 40(88.88%), margin of the abscess after I/V contrast was thin smooth wall in 30(66.66%) and thick irregular wall in 15(33.33%) of patients.

In this study cord compression was present in 21(46.66%). In this study evaluation of tuberculous spondylitis by MRI showed a sensitivity of 96.87%, specificity 84.61%, accuracy 93.33%, positive predictive value 93.93% and negative predictive value 91.66%. Khalequzzaman & Haque showed sensitivity and specificity of MRI were 95.2% and 75%, accuracy was 93.5%. Andronikou et al[3]. also found sensitivity, specificity, and accuracy of MRI were 100%, 80%, and 90%.

Conclusion

This cross sectional study was undertaken to evaluate the MRI performance in the diagnosis of tuberculous spondylitis. Most of the lesions were found in the thoracic region and majority of the cases involved two vertebrae. Altered marrow signal intensity, vertebral collapse, end plate destruction, intervertebral disc reduction with altered signal intensity, prevertebral, paravertebral soft tissue involvement and thin, smooth, rim like contrast enhancement pattern were the common MRI findings.

In the present study Sensitivity of MRI in the diagnosis of tuberculous spondylitis was 96.87%, specificity 84.61%, positive predictive value 93.93%, negative predictive value 91.66% and accuracy 93.33%.

The result of the current study showed that MRI is a reliable tool for the diagnosis of tuberculous spondylitis. It also can help in the planning for subsequent appropriate therapy. Therefore it can be concluded that MRI is a highly sensitive, specific and useful method in the diagnosis of tuberculous spondylitis.

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Effect of Core Muscles Strengthening Exercises on Low Back Pain in Patients who Underwent Abdominal Surgery

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Abstract

The physical and financial suffering from low back pain is increasing day by day. Abdominal surgery stands as one of the important preceding factor for this. But adequate measures and researches concerning low back pain following abdominal surgery and thereby planning for their management is still lacking in our county. This experimental study was carried out to measure the effect of core muscles strengthening exercises on patients with low back pain who underwent abdominal surgery and came to the department of Physical medicine and Rehabilitation in Sir Salimullah Medical College and Mitford Hospital, Dhaka. For a period of 12 weeks from May 2015 to August 2015 43 cases was purposively selected on the basis of the inclusion and exclusion criteria. Data were collected from interview, examination and investigation report.

In this study the group that went through the prescribed exercise showed improvement regarding low back pain related disability by hundred percent after 6 weeks, and, the group that didn't go through advised exercise showed improvement by seventy percent.This study conclude that core muscle strengthening exercise is an effective rehabilitation technique for all chronic low back pain patients who underwent abdominal surgery.

Key-words: *Core muscles exercises, Low back pain, Abdominal surgery.*

(Sir Salimullah Med Coll J 2017; 25: 70-76)

Introduction

The rise in disability due to back pain has been exponential with escalating medical and social costs.[1] The low back pain is considered to include dorsal pain located anywhere between the 12th thoracic vertebra and lower buttock up to gluteal folds or anus.[2] One of the important preceding factors for development of LBP is abdominal surgery. The inner core of abdomen is made of a group of muscles deep inside our body (transverse abdominus, multifidus, and pelvic floor) whose job is to stabilize the movement of larger muscles such as our arms and legs during movement. Moreover transverse abdominus acts as natural abdominal binder and provides strength to lower back muscles. In the procedure of abdominal surgeries the connective tissue is cut and the core loses strength making the person vulnerable to develop low back pain. So, increasing strength of core muscles can be the mainstay of treatment of low back pain in this aspect.[3,4] Because, core strengthening has been promoted as a preventive regimen, as a form of rehabilitation, and as a performance-enhancing program for various lumbar spine and musculoskeletal injuries.[5]

In our country huge money and medical attention is being paid for the treatment of this type of low back pain. Despite its effectiveness in treating LBP, core strengthening has had meager research and been paid poor attention. So, the aim of this study was to find out the effects of core muscles strengthening exercise on the patients with low back pain associated with prior abdominal surgery.

Materials and Methods

This is a Prospective Experimental Study carried out in the department of Physical Medicine, Sir

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Salimullah Medical College and Mitford Hospital, Dhaka, Bangladesh from May 2015 to August 2015. This study was carried out to see the effect of core muscles strengthening exercises on low back pain in patients who underwent abdominal surgery. By Purposive Sampling (Convenient non-probability method) 43 cases of low back pain with history of abdominal surgery that came to the department of Physical Medicine were selected as study cases. Patient of both sexes with complains of low back pain who underwent abdominal surgery at least before three months were included. Exclusion criteria were patients having major causes of LBP (eg. Intervertebral Disc Prolapse) other than history of abdominal surgery, patients having history of previous major trauma to lumbo-sacral spine, evidence of malignancy or tuberculosis. Having informed consent they were thoroughly evaluated.

The selected patients were divided randomly into two groups (Group-A and Group-B) by the way of lottery. In each group treatments provided in common were: ADL (Activity of Daily Living) instructions, Calcium with vitamin-D supplement, Analgesics. Additional treatment for group A was core muscle strengthening exercise.

Questionnaire encompassed a series of questions seeking basic demographic information, relevant history of low back pain and their disabilities. A complete clinical examination of the spine with particular attention to neurological signs, and examination of abdomen was carried out. Routine hematological examination, x-ray of lumbo-sacral spine both antero-posterior and lateral view, random blood glucose, serum creatinin, SGPT was done for all the patients. Additional investigations, like, M.R.I. of spine, USG of abdomen etc. were done where required.

The disabilities of patients were determined and recorded using the Revised Oswestry Low Back Pain Disability Index both before and after interventions. The assessment was done by the third person (co-investigator) unaware of the treatment given to the patients. All patients were observed initially at first visit, thereafter in 2nd, 3rd and 4th visit at 14 days interval.

Collected data were coded and compiled properly and processed by using computer based program SPSS version16. Data were analyzed to simple descriptive statistical analysis including frequency distribution, mean, standard deviation, percentage. Chi-square analysis was done between the variables. For all analytical tests level of significance was set at 0.05 and $p<0.05$ was considered significant. The results were fashioned in table, graphs and charts and explained according to the findings.

Operational definition:

The Revised Oswestry Low Back Pain Disability Index: It is a questionnaire designed to assess the impact of back pain on daily functioning, which has been shown to be a reliable and valid measure of disability in patients with low back pain [6,7,8]. It is a ten-section questionnaire including six statements in each section designed to assess limitations of various activities of daily living. For each section of six statements the total score is 5; if the first statement is marked, the score = 0; if the last statement is marked, the score = 5. Intervening statements are scored according to rank. If more than one box is marked in each section, the highest score is to be taken.

If all 10 sections are completed the score is calculated as follows:

Example: if 16 (total scored) out of 50 (total possible score) x 100 = 32%.

If one section is missed (or not applicable) the score is calculated:

Example: 16 (total scored)/45 (total possible score) x 100 = 35.6%.

So the final score may be summarized as:

(total score/(5 x number of questions answered)) x 100%.

It is suggested rounding the percentage to a whole number for convenience.[9]

A 4% difference before and after treatment has been regarded as a clinically meaningful difference.[10]

ODI Scoring: [11, 12]

0% to 20% (minimal disability): Patients can cope with most activities of daily living. No treatment may be indicated except for suggestions on lifting, posture, physical fitness and diet. Patients with sedentary occupations (ex. secretaries) may experience more problems than others.

21%-40% (moderate disability): Patients may experience more pain and problems with sitting, lifting and standing. Travel and social life are more difficult. Patients may be off work. Personal care, sleeping and sexual activity may not be grossly affected. Conservative treatment may be sufficient.

41%-60% (severe disability): Pain is a primary problem for these patients, but they may also be experiencing significant problems in travel, personal care, social life, sexual activity and sleep. A detailed evaluation is appropriate.

61%-80% (crippled): Back pain has an impact on all aspects of daily living and work. Active treatment is required.

81%-100% (bed ridden): These patients may be bed bound or exaggerating their symptoms. Careful evaluation is recommended.

Details of Interventions:

ADL (Activity of Daily Living) instructions: ADL (Activity of Daily Living) instructions was given to all patients in both printed paper (in Bangla with pictures) and verbally.

ADL (Activity of Daily Living) may be defined as the task of self maintenance, mobility, communication and home management that enable an individual to achieve personal independence in his or her environment.[13] ADL instructions helps patients to maintain correct postures and to protect the back from micro injury. So, It is necessary to teach the way to carry out A.D.L.[14]

ADL instructions: [13]

1. To avoid prolonged standing or sitting.
2. To use plain firm bed and soft single pillow.
3. During getting in and out of bed follow the sequence: flex the knees and lie on one side, hang the legs out of bed, then get up using both the hands.
4. To avoid stooping and to keep back straight during activity.
5. To avoid twisting.
6. To lift the objects with the knees bent and to keep it attached to body.[15,16]
7. To use a table under the mattress and sleep in supine and side line position. [16,17]
8. To wear low heeled shoes with flexible and corrugated sole. [18]
9. Back support should be worn when.
   - Lifting heavy weight objects.
   - Using equipments that produce vibrations. [19]

Exercises: Core Muscles Strengthening Exercise was given according to following steps:

Step 1: Stress breathing: Training basic belly breathing (deep belly breathing) for 1-2 minutes in the morning and before bed.

Step 2: To establish abdominal bracing by The stomach vacuum:

- Exhale and suck your stomach in at the same time
- Hold this contraction for at least 10 to 20 seconds, so that exercise remains effective.
- Once the 20 seconds are complete, inhale deeply and slowly
- Perform all the steps of this exercise, at least 10 to 15 times

The stomach vacuum can be performed at any time of the day, even when you are busy in other activities, like reading, watching TV and so on.

Step 3: To improve static endurance by pelvic tilt / lift exercise:

- Lie on your back with your knees bent and feet flat on the floor.
- Pull your belly button into your spine and stabilize your core.
- Slowly push your back into the floor by tilting your pelvis upward. Hold for 10 seconds before relaxing.
- Repeat the exercise 10 times.

Results

Among the cases 23 underwent core muscle strengthening exercise. At the first visit 16 of them had disability level 2 (moderate disability) all of which turned to disability level 1 (minimal disability) after 6 weeks. 7 of them were at disability level 3(severe disability) at initial contact, 4 of them improved to level 1 (minimal disability), and, 3 of them improved to 2 (moderate disability).

Of all cases 20 didn't receive core muscle strengthening exercise. 14 (70%) of them improved to lower disability level at the end of study; 3 cases (15%) showed no improvement, and, another 3 cases who initially were at the minimal disability level remained at the same.

Table-I

Effect of core muscles strengthening exercises on The Revised Oswestry Disability Index

Addition of Core musclestrengthening exercise				Final Level			Total
				1	2	3	
Core muscle strengthening exercise	Initial Level	2	Count	16	0		16
			% within Initial Level	100.0%	.0%		100.0%
		3	Count	4	3		7
			% within Initial Level	57.1%	42.9%		100.0%
	Total		Count	20	3		23
			% within Initial Level	87.0%	13.0%		100.0%
No Core muscle strengthening exercise	Initial Level	1	Count	3	0	0	3
			% within Initial Level	100.0%	.0%	.0%	100.0%
		2	Count	6	2	0	8
			% within Initial Level	75.0%	25.0%	.0%	100.0%
		3	Count	0	4	1	5
			% within Initial Level	.0%	80.0%	20.0%	100.0%
		4	Count	0	3	1	4
			% within Initial Level	.0%	75.0%	25.0%	100.0%
	Total		Count	9	9	2	20
			% within Initial Level	45.0%	45.0%	10.0%	100.0%

Table - II

The Revised Oswestry Disability Index (for low back pain / dysfunction)

Domains: Score:

Parameter	V0	V1	V2	V3
Section 1 - Pain Intensity				
Section 2 - Personal Care				
Section 3 - Lifting				
Section 4 - Walking				
Section 5 - Sitting				
Section 6 - Standing				
Section 7- Sleeping				
Section 8- Social Life				
Section 9- Travelling				
Section 10 -changing Degree of Pain				

Total Score

[V= Visit, V0 = 1st visit, V1= 2nd visit at 14 days interval, V2=3rd visit at 14 days interval, V3= 4th visit at 14 days interval]

The Revised Oswestry Disability Index (for low back pain/dysfunction)

Section 1-pain intensity

- ☐ The pain comes and goes and is very mild.
- ☐ The pain is mild and does not vary much.
- ☐ The pain comes and goes and is moderate.
- ☐ The pain is moderate and does not vary much.
- ☐ The pain comes and goes and is very severe.
- ☐ The pain is severe and does not vary much.

Section 2-personal Care

- ☐ I would not have to change my way of washing or dressing in order to avoid pain.
- ☐ I do not normally change my way of washing or dressing even though it causes some pain.
- ☐ Washing and dressing increases the pain, but I manage not to change my way of doing it.
- ☐ Washing and dressing increases the pain and I find it necessary to change my way of doing it.
- ☐ Because of the pain, I am unable to do some washing and dressing without help.
- ☐ Because of the pain, I am unable to do any washing and dressing without help.

Section 3-lifting

- ☐ I can lift heavy weights without extra pain.
- ☐ I can lift heavy weights, but it causes extra pain.
- ☐ Pain prevents me from lifting heavy weights off the floor, but I manage if they are conveniently positioned (e.g., on a table).
- ☐ Pain prevents me from lifting heavy weights off the floor.
- ☐ Pain prevents me from lifting heavy weights, but I can manage light to medium weights if they are conveniently positioned.
- ☐ I can only lift very light weights at the most.

Section 4-walking

- ☐ I have no pain on walking.
- ☐ I have some pain on walking, but it does not increase with distance.
- ☐ I cannot walk more than one mile without increasing pain.
- ☐ I cannot walk more than 1/2 mile without increasing pain.
- ☐ I cannot walk more than 1/4 mile without increasing pain.
- ☐ I cannot walk at all without increasing pain.

Section 5-sitting

- ☐ I can sit in any chair as long as I like.
- ☐ I can only sit in my favorite chair as long as I like.
- ☐ Pain prevents me from sitting more than one hour.
- ☐ Pain prevents me from sitting more than 1/2 hour.
- ☐ Pain prevents me from sitting more 10 minutes.
- ☐ I avoid sitting because it increases pain right away.

Section 6-standing

- ☐ I can stand as long as I want without pain.
- ☐ I have some pain on standing, but it does not increase with time.
- ☐ I cannot stand for longer than one hour without increasing pain.
- ☐ I cannot stand for longer than 1/2 hour without increasing pain.
- ☐ I cannot stand for longer than 10 minutes without increasing pain.
- ☐ I avoid standing because it increases the pain right away.

Section 7-sleeping

- ☐ I get no pain in bed.
- ☐ I get pain in bed, but it does not prevent me from sleeping well.
- ☐ Because of pain, my normal night's sleep is reduced by less than 1/4.
- ☐ Because of pain, my normal night's sleep is reduced by less than 1/2.
- ☐ Because of pain, my normal night's sleep is reduced by less than 3/4.
- ☐ Pain prevents me from sleeping at all.

Section 8-social Life

- ☐ My social life is normal and gives me no pain.
- ☐ My social life is normal, but increases the degree of pain.

- Pain has no significant effect on my social life apart from limiting my more energetic interests, e.g., dancing etc.
- Pain has restricted my social life and I do not go out very often.
- Pain has restricted my social life to my home.
- I have hardly any social life because of the pain.

Section 9-travelling

- I get no pain while travelling.
- I get some pain while travelling, but none of my usual forms of travel makes it any worse.
- I get extra pain while travelling, but it does not compel me to seek alternative forms of travel.
- I get extra pain while travelling, which compels me to seek alternative forms of travel.
- Pain restricts all forms of travel.
- Pain prevents all forms of travel except that done lying down.

Section 10-changing degree of pain

- My pain is rapidly getting better.
- My pain fluctuates, but is definitively getting better.
- My pain seems to be getting better, but improvement is slow at present.
- My pain is neither getting better nor worse.
- My pain is gradually worsening.
- My pain is rapidly worsening.

Discussion

Among the cases of current study 23 underwent core muscle strengthening exercise. At the first visit 16 of them had disability level 2 (moderate disability) all of which turned to disability level 1 (minimal disability) after 6 weeks. And, 7 of them showed disability level 3(severe disability) at initial contact, 4 of them improved to level 1 (minimal disability), and, 3 of them improved to 2 (moderate disability). This shows that each cases in this group improved to lower disability level, that is, the improvement rate regarding low back pain related disability is hundred percent among the cases undertaken core muscle strengthening exercise.

Of all cases 20 didn't receive core muscle strengthening exercise. 14 patients (70%) in this group turned to lower disability level at the end of study, that is, improved in welbeing; 3 cases (15%) showed no improvement, and, another 3 cases who initially were at the minimal disability level remained at the same.

So, in this study the group that went through the prescribed exercise showed improvement by hundred percent after 6 weeks, and, the group that didn't go through advised exercise showed improvement by seventy percent and no improvement by fifteen percent.

The outcome of the study is consistent with the results of the studies done with core strengthening exercise on patients having low back pain where it has been revealed that Stabilization exercises for patients with low back pain may help to decrease pain and disability.[20 21 22.]

Another similar study where 30 patients had received core muscle strengthening exercise for six weeks showed improvement in all the outcome measures including Oswestry Disability Index.[23]

So, it had been established by various studies that core strengthening exercise is helpful in reducing low back pain related disability. But, does it help reduce disability from low back pain developed after abdominal surgery was the query of this study. And we see that the cases receiving core exercise as intervention here shows reduction of disability level markedly (hundred percent) whereas the cases not receiving such exercise shows reduction of disability seventy percent of cases. This remarkable difference in improvement can be explained by the fact that muscle strength increases along with increased thickness of muscles. And Studies showed that this kind of exercise may be effective method to apply to increase for the thickness of abdominal muscles [Changes in deep abdominal muscle thickness during common trunk-strengthening exercises using ultrasound imaging.[24,] specially of Tranversus Abdominis and External Oblique using abdominal draw-in maneuver and Internal Oblique using core exercise.[25]

Conclusion

Core muscle strengthening exercise is an effective rehabilitation technique for all chronic low back

pain patients who underwent abdominal surgery. Although the sample size is short the positive result is encouraging for advising this exercise in the routine practice to improve the treatment regimen & to increase the working capacity of the patient suffering from low back pain.

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Response of Neoadjuvant Chemotherapy in Locally Advanced Breast Cancer

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Abstract

Background*: Neoadjuvant chemotherapy has changed the management pattern of locally advanced breast cancer (LABC). However, very few studies had been carried out in our country in this regard. This study was done to assess the response of neoadjuvant chemotherapy in locally advanced breast cancer.*

Methodology*: The study was conducted in the Department of Surgical Oncology of the National Institute of Cancer Research & Hospital from July 2014 to June 2016. Patients with locally advanced breast cancer (T3N0/T2N2/T3N1-2/T4Nx/TxN3) receiving neoadjuvant chemotherapy (NACT) and undergoing surgery were considered as study population. Ninety four patients were included. All patients received 4 cycles of Anthracycline based chemotherapy. Clinical and pathological responses to different chemotherapy regimens were assessed.*

Results*: Mean age of the patients was 42.6 ± 9.565 years. IDCC (Infiltrating duct cell carcinoma) was found in 96.8% of cases, 81 patients (86.2%) responded to NACT in the form of complete or partial response clinically. Clinical complete response was found in 15 (16%) patients. Partial response was seen in 66 (70.2%) patients, stable disease in 4 (4.2%) patients and progressive in 9 (9.6%) patients. Pathological partial response was observed in 77 (82%) cases and poor response in 18% of cases. No patient was found with pathological complete response. Maximum clinical complete response was seen in ACT regimen (7.4%).*

Conclusion*: Neoadjuvant chemotherapy is a potential avenue to convert initially inoperable disease to operable one or to make it feasible for more conservative surgery.*

Keywords: *Neoadjuvant Chemotherapy, Advanced Breast Cancer, Response*

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Introduction:

Locally advanced breast cancer (LABC) refers to a term that includes a heterogeneous group of diseases. A subset of stage IIB (T3N0), stage III disease and inflammatory breast cancer (IBC) are included in this group. LABC accounts for 10-20% in the West[1] while in Bangladesh, it accounts for 52.4% of all cases[1,2]. Although the incidence of LABC has decreased significantly in countries with enhanced resources due to widespread education and screening programmes[3,4], it remains a daily encounter for surgeons and oncologists in the developing countries. The treatment of LABC has changed dramatically over last few decades. NACT was introduced in 1970s and has become accepted as a standard of treatment for locally advanced breast cancer. The introduction of neoadjuvant chemotherapy (NACT) in LABC offered us advantages like initiation of early systemic therapy, delivery of drugs through intact vasculature, down-staging of tumors, which makes inoperable tumors operable and renders tumors suitable for breast conserving surgery (BCS)[5,6]. There are very few Bangladeshi studies of NACT in LABC published until date. Keeping this in mind, we have conducted this study to see the response of NACT in LABC patients.

Materials and methods

Patients with locally advanced breast cancer (T3N0/T2N2/T3N1-2/T4Nx/TxN3) receiving neoadjuvant chemotherapy (NACT) and undergoing surgery at National Institute of Cancer Research and Hospital (NICRH) from July 2014 to June 2016 were

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considered as study population. Ninety four patients were included in the study following proposed inclusion and exclusion criteria. The pathologic diagnosis was confirmed by tru cut biopsy, fine-needle aspiration cytology or incision biopsy performed before treatment. An informed written consent was obtained from each patient. They were interviewed and examined before and after neoadjuvant chemotherapy (NACT). All patients received Anthracycline based chemotherapy according to the advice of Department of Medical Oncology, National Institute of Cancer Research and Hospital (NICRH). All patients received 4 cycles of neoadjuvant chemotherapy. Weight and height were measured during the first visit and recorded. Reexamination was done within 3 to 6 weeks following 4^{th} cycle of NACT. All the particulars of the patients, detailed history, physical examination and laboratory finding were recorded in the data collection sheet. After surgery specimen was sent to Department of Histopathology, National Institute of Cancer Research and Hospital (NICRH) for histopathological examination.

In AC regimen (Anthracycline = Doxorubicin/ Epirubicin and Cyclophosphamide) Doxorubicin 60 mg/m^2/ Epirubicin 100 mg/m^2 with Cyclophosphamide 600 mg/m^2, in ACT regimen Paclitaxel 80 mg/m^2 following AC and in FAC regimen, Flurouracil 500 mg/m^2 with AC was given according to the schedule.

The response of NACT on tumour can be measured by both clinical and pathological assessment. Clinical response was categorized according to revised response evaluation criteria in solid tumours (RECIST Version 1.1) guideline[7]. A clinical complete response (cCR): Disappearance of all target lesions. A clinical partial response (cPR): At least a 30% decrease in the diameters of target lesions, taking as reference the baseline diameters. A clinical progressive disease (cPD): At least a 20% increase in the diameters of target lesions. (Note: the appearance of one or more new lesions is also considered progression). A clinical stable disease (cSD): Neither sufficient shrinkage to qualify for cPR nor sufficient increase to qualify for cPD.

A pathological complete response (pCR) was defined if no residual carcinoma was seen macroscopically and microscopically. Pathological partial response (pPR): it was defined as presence of invasive carcinoma with stromal alterations. Pathological no response (pNR): it was defined as little modification in the original tumor appearance[8].

Results:

Patient and tumor characteristics: Most of the patients (48/94) were in the 41- 60 years age group and mean age of the patients was 42.6 ± 9.565 years. Majority of the patients were premenopausal (84%). 71.2% patients presented with lump >5cm in diameter and axillary lymph nodes were palpable in 81% and fixed in 31% of patients. Regarding staging prior to NACT, stages IIB subgroup was found in 18 % of patients and maximum patients were in stage IIIA subgroup comprising 62.7% of patients.

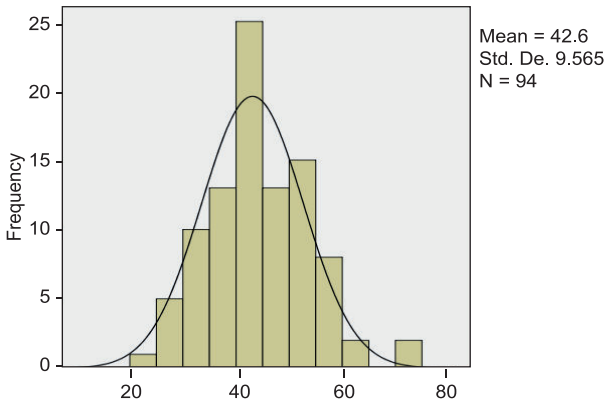

Fig.-1 : *Histogram showing age distribution of the patients*

Table I

Patient and tumor characteristics

Patient characteristics	Percentage
Age	
21-40	46.8
41-60	51.1
61-80	2.1
Menopause	
Yes	16
No	84
Tumor size	
T2	13.8
T3	71.2
T4	16.0
Axillary LN (palpable)	
Yes	80.9
No	19.1
Axllary LN (Fixed)	
Yes	30.9
No	69.1
Staging	
IIB	18.1
IIIA	52.7
IIIB	10.6
IIIC	8.6

Chemotherapy regimen: Majority of the patients 63 (67%) got AC/EC (doxorubicin, cyclopho-sphamide/ epirubicin, cyclophosphamide) regimen followed by FAC (5-Fluorouracil, doxorubicin, cyclopho-sphamide) regimen (16%) and TAC (Paclitaxel, doxorubicin, cyclophosphamide) regimen (15%). All patients received 4 cycles of chemotherapy.

Table-II
Chemotherapy regimen

Regimen	Percentage
AC	67.0
TAC	17.0
FAC	16.0

Response to neoadjuvant therapy: Clinical complete response was found in 15 (16%) patients. Partial response was observed in 66 (70.2%) patients, stable disease in 4 (4.2%) patients and progressive in 9 (9.6%) patients. Pathological partial response was observed in 77 (82%) cases and poor response was found in 18% of cases. No patient was found with pathological complete response (cPR).

Table-III
Response to neoadjuvant chemotherapy

Clinicopathological variable	Percentage
Clinical	
Complete response	16.0
Partial response	70.2
Progressive	9.6
Stable	4.2
Pathological	
Partial response	81.9
No response	18.1
Histology	
IDCC	96.8
Lobular	1.1
Mucinous	2.1
Grade	
II	86.2
III	13.8
Skin involvement	
Yes	19.1
No	80.9

Maximum clinical complete response was seen in ACT regimen (7.4%) followed by AC regimen (6.4%). Most of the partial pathological response was found in AC regimen (56.3%). Progressive (7.4%) and stable disease (3.2%) were found in AC regimen.

Table-IV
Cross tabulation between neoadjuvant regimen and response to therapy

Variables		Neoadjuvant regimen				P-value
		AC	ACT	FAC	Total	
		n (%)	n (%)	n (%)	n (%)	
Clinical	Complete	6 (6.4)	7 (7.4)	2(2.1)	15 (15.9)	
response	Partial	47 (50.0)	8 (8.5)	11 (11.7)	66 (70.2)	.08
	Progressive	7 (7.4)	1(1.1)	1 (1.1)	9 (9.5)	
	Stable	3 (3.2)	0 (0)	1 (1.1)	4 (4.4)	
Pathological	Partial	53 (56.3)	13 (13.8)	11 (11.7)	77 (81.9)	.56
response	No	10 (10.6)	3 (3.2)	4 (4.4)	17 (18.1)	

Surgery: According to our institutional protocol all patients had undergone modified radical mastectomy (simple mastectomy with axillary dissection).

Postoperative histopathology findings: Tumour size 2-5 cm was found in 53(56.4%) of cases whereas 4-9 lymph node was identified in 53.2% of cases. Skin involvement by tumour was found in 19.1% of cases. Grade II tumour was found in 86% of cases. IDCC (Infiltrating duct cell carcinoma) was found in 96.8% of cases, mucinous carcinoma in 2% and lobular carcinoma in 1% cases. Most of the surgical specimen was in pT2N1Mx (17%) status followed by pT2N0Mx and pT2N2Mx each of which was 12.8%.

Discussion:

In this study, mean age of the patients was 42.6 ± 9.565 years. Raina *et al*[8] in an early breast cancer study reported median age of 47 years whereas Rahman M *et al*.[2] showed mean age of presentation was 47 years. Majority of the patients were premenopausal (84%) which is slightly lower than other studies by Yadav *et al*[9].

All patients received anthracycline based 4 cycles of chemotherapy. When docetaxel has been compared head on with anthracycline based chemotherapy it seems to show a better response rate in selected patients as reported in a small series.[10] There is a lot of variation in the number of cycles of chemotherapy that are given in neoadjuvant setting in the literature[10] Some of them used 4 cycles and some had extended it up to maximal response.

81 patients (86.2%) responded to NACT in the form of complete or partial response clinically. Clinical complete response was found in 15 (16%) patients and partial response in 66 (70.2%) patients. Several other studies have shown a similar objective response of primary tumor in patients with locally advanced breast cancer ranging from 71 to 87%[11]. On the other hand, the present results are much higher than that reported by Yadav et al who found that only 23% showed response to neoadjuvant chemotherapy[9]. Another study by Tamer et al in 2010 also showed much lesser overall response rates to neoadjuvant chemotherapy 54.5%; (CR 3% and PR 51.5%) and Kim et al also reported that the overall response rate to neoadjuvant chemotherapy is 60% (4% CR and 56% PR) respectively[12,13,14].

In our study, a total of 9 patients (9.6%) progressed on NACT. For patients who progress, regimen can be changed over to non-cross-resistant drugs and observed for response. Stable disease was seen in 4 (4.2%) patients .For patients with stable disease, surgery if feasible can be offered or radiotherapy could be considered[14].

Pathological partial response was observed in 77 (82%) cases and poor response was found in 18% of cases. No patient was found with pathological complete response (cPR). NSABP-27[15] showed pCR rate after NACT of 26.1%. Many other studies showed variable pCR ranging from 4% to 40%[16,17,18]. Our study showed no pCR possibly because of dose and quality of drug and we did not include patients with early breast cancer.

Maximum clinical complete response was seen in ACT regimen (7.4%) followed by AC regimen (6.4%). Most of the partial pathological response was found in AC regimen (56.3%). Progressive (7.4%) and stable disease (3.2%) were found in AC regimen. In previously published study, overall clinical response for anthracycline chemotherapy was 53.7% while 74.3% for docetaxel chemotherapy.[19] The use of taxanes in advanced breast cancer patients who had failed with anthracycline based chemotherapy has shown improved overall response rate.[20] Similarly in National surgical adjuvant breast and bowel project B27, involving 2411 patients with operable breast cancer, addition of docetaxel to anthracycline-based chemotherapy preoperatively, improved the complete clinical and pathological response rate compared to preoperative anthracycline-based chemotherapy alone (clinical complete response- 40.1% vs 63.6%; $P = 0.001$, complete pathological response- 13.7% vs 26.1%; $P = 0.001$).[21]

The limitation of this study is its small sample size and follow-up was not done. Breast conserving surgery was not practiced due to local protocol.

Conclusion:

Though downstaging of LABC by neoadjuvant chemotherapy is an attractive option for breast conserving surgery (BCS), although it was not done in studied patients. Further study is recommended in this aspect in our country.

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A Comparative Study Between The Outcome of Buccal Mucosal Graft Urethroplasty Placing Dorsolateral and Dorsal Onlay for Long Segment Anterior Urethral Stricure

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Abstract:

Objective : *To find out the effective surgical procedure for the management of long segment anterior urethral stricture.*

Materials and Methods *:Sixty eight patient having urethral strictures admitted in the department of Urology, Sir Salimullah Medical College Hospital, Dhaka from June 2016 to June 2017. Patients were divided into two groups .Group A, underwent dorsolateral onlay buccal mucosal graft urethroplasty and Group B underwent dorsal onlay buccal mucosal urethroplasty .All patients were followed upto six months. The statistics used to analyse the data were descriptive and p value <0.05 was considered as significance.*

Results :*Mean age was in group A, 36.8±4.27 years and in group B, mean age was 36.16±4.33 years. Etiology of stricture in group A and group B were inflammatory 60% & 66.66%, idiopathic 26.66% & 20%, traumatic 6.66% & 3.33% and iatrogenic 6.66% & 10% respectively. Highest number of strictures 16 (53.33%) were located in the penile part in Group-A and 14 (46.67%) in Group-B. Bulbar urethral strictures were 05 (16.67%) in Group-A and 06(20%) in Group-B. Nine (30%) in Group-A and 10 (33.33%) in Group-B, patients the strictures involved both bulbar and penile part. Mean length of stricture in group A was 42.5±5.79 mm and in group B was 42.83±5.91mm. None of the above findings were statistically significant.*

Group A and group B pre-operative mean urinary flow rates were 6.68±1.35 and 7.00±1.46 ml/sec and post-operative (after 6 months) were 21.50±5.50 and 18.30±4.30 ml/sec respectively. Statistical analysis showed a significant difference between two groups (p<0.05).In this study the overall success rate was 86.67% in dorsolateral and 63.33% in dorsal onlay buccal mucosal graft urethroplasty. Statistically significant difference was observed between the two groups(p<0.05).

Conclusion: *The result of this study showed that the outcome of dorsolateral onlaybuccal mucosal graft urethroplasty is better than dorsal onlaybuccal mucosal graft urethroplasty.*

Key words: *Buccal Mucosal Graft, Dorsolaetral onlay, Dorsal Onlay.*

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Introduction

Urethral stricture is fibrotic narrowing of urethral lumen and fibrosis usually extends into the surrounding corpus spongiosum causing spongiofibrosis. These narrowing restrict urine flow[1]. Loss of uro-epithelial lining due to internal trauma, urethritis or external trauma, is the main pathology in the development of spongy urethral stricture.. Significant progress is made over the last 50 years which allows many of the most complex strictures to be reliably reconstructed in one stage.

The selection of appropriate repair is governed to a large degree by the location of the stricture, its length and the presence of local adverse features. The goal of surgical repair is not only to achieve urethral patency, but also to avoid compromising normal sexual function and to avoid altering penile

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cosmetics[2]. Patient with longer i.e more than 2 cm or in pendulous urethra having more complex stricture cannot be offered anastomotic urethroplasty because of difficulties of bringing the ends together, need some form of substitution urethroplasty will be necessary[3].

Urethral substitution may be accomplished in a variety of ways. Options includes genital skin flaps, and grafts of genital and extra genital tissues pedicled skin flaps have been the most popular forms of substitution urethroplasty but they are seen more prone to develop complications than graft[3].

Grafts are used most frequently for the urethroplasty of majority of strictures. The first use of buccal mucosa for urethral substitution was early as in 1941[4]. Now a days buccal mucosa has been used for urethral reconstruction with promising early results.

The technique adopted graft apposition on the ventral surface of the urethra, which can results in weakening of the corpus spongiosum and development of pseudo-diverticulum or an urethrocele, causing post void dribbling and ejaculatory failure[5].The procedure, in which the graft placed dorsally, not only maintains urethral patency but also avoids graft weakening.

Now a days, in all over the world, dorsal onlay, dorsal inlay and dorsolateral onlay procedures are practiced. Among various procedure of treatment, none can claim to be the best method for long segment anterior urethral stricture management.

The present study is designed to observe and compare the outcome of dorsolateral onlay and dorsal onlay buccal mucosal graft urethroplasty for long segment anterior urethral stricture. This study will help to find out the better procedure for the curative treatment of long segment anterior urethral stricture.

Materials and Methods

A hospital based, experimental study was conducted in the department of urology, Sir Salimullah Medical College Mitford Hospital, Dhaka from June 2016 to June 2017to evaluate the short term outcome of dorsolateral & dorsal onlaybuccal mucosal graft urethroplasty for anterior urethral stricture involving the bulbar and penile part and to determine the better option between the two.Outcome of this study was evaluated on the basis of post-operative satisfactory voiding, peak urinary flow rate, presence or absence of urinary tract infection, wound infection, Urethrocutaneous fistula, recurrence of stricture and chordee that were obtained by questionnaire, urine R/M/E and C/S, uroflowmetry, retrograde urethrogram and voiding cystourethrogram and urethrocystoscopy. Success was defined as a patient having satisfactory voiding- peak urine flow rate on uroflowmetry was ≥ 15ml/s dilatation, internal urethrotomyor urethroplasty.

Preparation of the patients

All the male patients of stricture urethra of any age attending to the urology department were evaluated by history, clinical examination and all required investigations to detect etiology, site & length of urethral stricture and to assess the general condition of the patient.. Three days before surgery, the patient was advised to use povidone iodine mouthwash for oral cleansing and continued using it for 3 days following surgery. A broad spectrum injectable antibiotic was administered intravenously one hour before the procedure and for 3 days afterwards. The patient was intubated through the nose or mouth and extended lithotomy position was done. The patient was draped with two separated draw sheets so that two surgical team could work simultaneously. One team harvested and prepared the buccal mucosa, while the second team exposed the penile or bulbar urethra.

Operative procedure

After general anaesthesia the patient was placed in an extended lithotomy position.The skin of the suprapubic region, scrotum and perineum was shaved and washed with Hexiscrub and then painted with povidone iodine solution and draped appropriately. Urethrocystoscopy was done to visualize the urethra distal to stricture and a guide wire was placed. Methylene blue was injected into the urethra to better visualize the urethral mucosa. A midline perineoscrotal incision was made. The urethra was dissected from the corpora cavernosaonly along the left side, starting from the distal tract where muscles were absent leaving the bulbospongiosum muscle and the central tendon of the perineum intact. Along the right side, the urethra remains attached to the corpora

cavernosa for its full length, thus preserving its lateral vascular supply. On the left side, the urethra was partially rotated and the lateral urethral lumen was exposed. The stricture was then incised along its entire length by extending the urethrotomy distally and proximally. Once the entire stricture has been incised, the length and width of the remaining urethral plate was measured.

Preparation of Urethra for dorsal onlay urethroplasty

The patient was placed in extended lithotomy position after general anaesthesia. The skin of the suprapubic region, scrotum and perineum was shaved and washed with Hexiscrub and then painted with povidone iodine solution and draped appropriately. Urethrocystoscopy was done to visualize the urethra distal to stricture and a guide wire was placed. Methylene blue was injected into the urethra to better visualize the urethral mucosa. A midline perineoscrotal incision was made. The stricture segment was identified, dissected and completely mobilized from corpora cavernosa. It was then rotate 180^0 and an incision was made on the stricture segment dorsally at midline and extended proximally and distally for 0.5 cm into the healthy urethra and the defect was measured.

Harvesting and Preparation of Buccal Mucosal Graft: For harvesting of buccal mucosa, the length of the stricture was measured.A solution of 1% lignocaine with 1:100000 Adrenaline was injected submucosally at proposed site for harvest. A full thickness mucosal graft was procured using a knife and sharp scissors.Donor site was closed with a running chromic catgut suture or left open if large.

Fixation of the graft: Thebuccal mucosal graft was trimmed to an appropriate size according to the length and width of the urethrotomy and it was spread & fixed over the tunica albuginea. The two apices of the graft were sutured to the proximal and distal apices of the urethrotomy. The free graft of buccal mucosa was spread and sutured to the corpus cavernosa using interrupted stitches. The mucosal margins of the opened urethra were sutured to the sides of the patch graft. Graft was placed properly and all bleeding points were controlled. Then a drain was kept in situ and wound was closed in layers.

Post-operative care

Nutrition was left to the desire of the patient with no restriction of food after complete recovery from anaesthesia. Injectable antibiotic was given for 3 days then oral for 7 days. Donor site was inspected for any abnormality and advised mouth wash with povidone iodine three times daily for 7 days. Drain was removed on 2^{nd} postoperative day and dressing on 4^{th} postoperative day. Povidone iodine cream applied on the wound and at meatus along the catheter. Patient discharged on 6^{th} day after surgery if no postoperative complications observed. If any complication noted, treatment continued until the problem has been solved and then discharged with necessary advice. The catheter was kept in situ for 3 weeks. After 3 weeks patient was advised to visit at OPD clinic. On 21^{st} post-operative day pericatheterurethrogram was done. If no leakage was noted then the catheter was removed and patient was advised to micturate. If the patient can micturate well then the suprapubic catheter was removed. If any leakage was noted on urethrogram then the patient was advised to keep the catheter for another 7 days and catheter was removed on 28^{th} post-operative day and suprapubic catheter was removed if the patient can void well.

Follow up: All the patients were counseled and requested to attend for follow up on mentioned date at OPD clinic. All the patients were followed up on 2^{nd} day of removal of urethral catheter, after 3 months and 6 months.

Statistical analysis

After meticulous checking and rechecking data analysis were done using computer, based on statistical software (SPSS, version-13). p value <0.05 was considered as significant.

Results

Total 68 patients were divided into two groups on alternate basis. Among them 34 patients underwent dorsolateral (Group-A) and another 34 patients underwent dorsal onlay (Group-B) buccal mucosal graft urethroplasty for anterior urethral stricture. During the study period 04 patients from group A and 04 patients from group B were dropped out. Finally 30 patients of group A and 30 patients of group B were completed the study. All patients were followed for 06 months.

In group A, mean age was 36.8±4.27 years and in group B, mean age was 36.16±4.33 years. Etiology of stricture in group A and group B were inflammatory 60% & 66.66%, idiopathic 26.66% & 20%, traumatic 6.66% & 3.33% and iatrogenic 6.66% & 10% respectively. Highest number of strictures 16 (53.33%) were located in the penile part in Group-A and 14 (46.67%) in Group-B. Bulbar urethral strictures were 05 (16.67%) in Group-A and 06(20%) in Group-B. Nine (30%) in Group-A and 10 (33.33%) in Group-B patients the strictures involved both bulbar and penile part. Mean length of stricture in group A was 42.5±5.79 mm and in group B was 42.83±5.91mm. None of the above findings were statistically significant.

Table I

Status of uroflowmetry at follow-up (n=60)

Follow up Uroflowmetry		Group A (n=30)		Group B (n=30)		p value
		No	(%)	No	(%)	
1st	Success	29	96.67	23	76.67	0.02
	Failure	1	3.33	7	23.33	
2nd	Success	28	93.33	21	70	0.04s
	Failure	2	6.67	09	30	
3rd	Success	26	86.67	19	63.33	0.04s
	Failure	4	13.33	11	36.67	

s-Significant

Fisher's Exact test was done to analyze the data.

Uroflowmetry (Q-max in ml/sec)

Success: ≥15 ml/sec

Failure: <15 ml/sec.

In Group-A on the basis of results of uroflowmetry done on 2nd day after removal of urethral catheter and repeated at 3rd and 6th month success rate was 96.67%, 93.33% and 86.67% respectively. In Group-B, success rates were 76.67%, 70% and 63.33% respectively. Success and failure rate on the basis of uroflowmetry between the two groups were statistically significant on 2nd day after removal of urethral catheter, 3rd month and 6th month follow up (p value < 0.05).

Table II

Status of Retrograde urethrogram and voiding cystourethrogram (RGU and VCUG) at follow up (n=60)

Follow up/ RGU & VCUG		Group A (n=30)		Group B (n=30)		p value
		No	(%)	No	(%)	
3rd	Success	28	93.33	21	70	0.04s
month	Failure	2	6.67	09	30	
6th	Success	26	86.67	19	63.33	0.04s
month	Failure	4	13.33	11	36.67	

s-Significant

Fisher's Exact test was done to analyze the data.

Success: RGU & VCUG was not done because of uroflowmetry ≥15 ml/sec.

Failure: Abnormal urethrogram.

On 3rd month follow up, RGU and VCUG was done in 2 (6.67%) cases in Group-A and 09(30%) cases in Group-B at 3rd month and 4 (13.33%) cases in Group-A and 11 (36.67%) cases in Group-B at 6th month because of their uroflowmetry< 15 ml/sec and abnormal urethrogram were noted. Others revealed as success cases. In Group-A 28 cases (93.33%) and in Group-B 21 cases (70%) at 3rd month revealed as success. On 6th month follow up abnormal urethrogram was found in 4(13.33%) cases in Group-A and 26 (86.67%) cases revealed success cases and in Group-B 011 (36.67%) cases were found abnormal urethrogram and 19(63.33%) cases revealed success. Results between the two groups were statistically significant on follow up during at 3rd month and at 6th month (p value <0.05).

Table III

Status of urethrocystoscopy at 6th month follow up (n=60)

Follow up urethrocystoscopy	Group A (n=30)		Group B (n=30)		p value
	No	(%)	No	(%)	
Success	26	86.67	19	63.33	0.04s
Failure	4	13.33	11	36.67	

s-Significant

Fisher's Exact test was done to analyze the data.

Success: Urethrocystoscopy was not needed.

Failure: Urethrocystoscopy was done due to abnormal RGU & VCUG and abnormal urethrocystoscopic findings noted.

Urethrocystoscopy was done in 04(13.33%) cases in Group-A and 11(36.67%) cases in Group-B due to abnormal findings in RGU & VCUG on 6th month

follow up. In these patients abnormal findings were noted and urethral interventions were needed to solve the problems. Others did not need urethroscopy were regarded as success cases. In Group-A 26 (86.67%) and in Group-B 19 (63.33%) revealed as success cases. Results between the two groups were statistically significant at 6th month follow up (p value <0.05).

Table IV

Post-operative complications in recipient site (n=60)

Complications	Group A (n=30)		Group B (n=30)		p value
	No	(%)	No	(%)	
UTI	01	3.33	07	23.33	0.02s
Wound infection	01	3.33	07	23.33	0.02s
Urethrocutaneous fistula	00	00	6	20	0.02s
Recurrence of stricture	04	13.33	11	36.67	0.04s
Chordee	00	00	00	00	

s-Significant

Fisher's Exact test was done to analyze the data.

Among the post-operative complications urinary tract infection was observed in 01 (3.33%) case, wound infection was in 01 (3.33%) and recurrence of stricture was 04 (13.33%) cases in Group-A and in Group-B urinary tract infection was 07 (23.33%) cases, wound infection was found in 07 (23.33%) cases, Urethrocutaneous fistula was 06 (20%) cases and recurrence of stricture was 11 (36.67%) cases. But Urethrocutaneous fistula was absent in Group-A. No case of either group developed chordee. Results between the two groups were statistically significant (p value < 0.05).

Table V

Comparison between two groups (n=60)

	Group-A Dorsolateral onlay BMG urethroplasty	Group-B Dorsal onlay BMG urethroplasty	p value
Mean age of patients	36.8±4.27	36.16±4.33	0.542ns
Mean length of stricture	42.5±5.79	42.83±5.91	0.543ns
Pre-operative peak urinary flow rate (ml/sec)	6.68±1.35	7.00±1.46	0.662ns
Mean peak urinary flow rate at 3rd follow up (ml/sec)	21.50±5.50	18.30±4.30	0.015s
Urinary tract infection	3.33%	23.33%	0.02s
Wound infection	3.33%	23.33%	0.02s
Urethrocutaneous fistula	00%	20%	0.02s
Recurrence of stricture	13.33%	36.67%	0.04s
Overall success	86.67%	63.33%	0.04s

s-Significant ns-Non-significant

Fisher's Exact test was done to analyze the data.

There was statistically significant difference between the outcome of Dorsolateral onlay (Group-A) and Dorsal onlay (Group-B) urethroplasty (p value <0.05)

Table VI

Patient's satisfaction (n=60)

Level of satisfaction	Group A (n=30)		Group B (n=30)		p value
	No	(%)	No	(%)	
Satisfied	26	86.67	19	63.33	0.03s
Not satisfied	03	10	09	30	
Mixed	01	3.33	02	6.67	

s-Significant p value was reached from Pearson's chi-square test.

In Group-A 86.67% were satisfied, 10% not satisfied and 3.33% had mixed feelings. In Group-B 63.33% were satisfied, 30% not satisfied and 6.67% had mixed feelings. There was statistically significant difference between two groups (p value <0.05).

Discussion

The present work was carried out to evaluate and compare the short term outcome of dorsolateral onlay buccal mucosal graft urethroplasty with dorsal onlaybuccal mucosal graft urethroplasty for anterior urethral stricture. Total 68 patients were included in this study. Patients were divided into two groups , Group A- Dorsolateral onlaybuccal mucosal graft and Group B- Dorsal onlaybuccal mucosal graft but 4 patients of Group-A and 4 patients of Group-B were dropped out from the study finally 60 patients had completed the study. Among them Group-A(Dorsolateral onlay) included 30 patients and Group-B(Dorsal onlay) included 30 patients.

In this study, no significant difference (p value >0.05) was found between the two groups in terms of mean age of patients ,etiology , site of stricture and length of stricture (Table IV). traumatic, iatrogenic and idiopathic. Various international series related to anterior urethral stricture management mentioned the causes of stricture are more or less same with the present study. Comparison of causes of stricture does not show any significant difference between the two groups (Table II)

The site of stricture in this study (Table III) corresponds with the study (6,10). Mean length of stricture of Group-A was 42.5±5.79 mm and Group-B was 42.83±5.91 mm which matches with study of Datta and Kulkarni[6,7]. The highest number of patients i.e 9 (30%) patients in Group-A and 11 (36.66%) patients in Group-B had 30-39mm. Statistically there was no significant difference of site and length of stricture between two groups.

In present study, preoperative peak urinary flow rate in uroflowmetry in Group-A was 6.68±1.35 ml/sec and in Group-B 7.00±1.46 ml/sec. There was no significant difference of mean peak urinary flow rate between the two groups. In the study by Singh, Patak, Arndankar[12] mean preoperative Qmax was 6.7 ml/sec which is similar to this study.

In this study, post-operative peak urinary flow rate in Group-A was 21.50±5.50 ml/sec and in Group-B was 18.30±4.30 ml/sec (Table I). It is evident that the peak urinary flow rate increased statistically significant from their pre-operative finding and also significant difference was observed in post-operative peak urinary flow rate between two groups. This is consistent with the study conducted by Habib et al.[10] where post-operative mean peak urinary flow rate was 19.50 ml/sec. Another study[8] showed post-operative mean peak urinary flow rate was 17.3 ml/sec which is similar to this study. In this study, peak urinary flow rate ≥15 ml/sec was regarded as success cases and <15 ml/sec was regarded as failed cases. In the present study on the 1st, 2nd and 3rd follow up the uroflowmetry showed 96.67%, 93.33% and 86.67% success rates in Group-A and 76.67%, 70% and 63.33% in the Group-B respectively. There was statistically significant difference between the two groups (Table II). Similar findings observed in a study done by Islam[8].

Post-operative urinary tract infection, wound infection, urethrocutaneous fistula, recurrence of stricture and chordee were evaluated during follow up. In Group-A urinary tract infection and wound infection occurred in 3.33% and in Group-B was 23.33% which was managed with culture sensitive antibiotic and regular dressing in case of wound infection. No patient developed urethrocutaneous fistula in Group-A but in Group-B 06 (20%) developed urethrocutaneous fistula which needed 2nd surgical procedure. Four (13.33%) patients in Group-A and 11 (36.67%) patients in Group-B developed recurrence of stricture which was evaluated by RGU and VCUG and urethrocystoscopy and required subsequent surgical procedure. All these results were statistically significant between two groups (p<0.05) (Table III). These results is nearly similar to Shah[9].

There are different studies showed that, the dorsolateral onlay BMG urethroplasty success rate 92%[7], 93.3%[10], 92%[8]. On the other hand the success rate of dorsal onlay BMG urethroplasty was 85%[5], 77. and 82.85%[11]. In the present study the overall success rate was 86.67% in dorsolateral onlay and 63.33% in dorsal onlay BMG urethroplasty group (Table V) . There was statistically significant difference in outcome

between two groups. On the other hand the post-operative complications were higher in dorsal onlay BMG urethroplasty which was also statistically significant (Table III). Excessive urethral mobilization and loss of vascular continuity in both sides may be the possible causes of higher complications in dorsal onlay BMG urethroplasty.

In the present study, overall patient's satisfaction was higher (86.67%) in Group-A than in Group-B which was (63.33%). There was statistically significant difference between two groups (Table-VI).

Conclusion

The result of this study showed that the outcome of dorsolateral onlaybuccal mucosal graft urethroplasty is better than dorsal onlay buccal mucosal graft urethroplasty. So it can be concluded that dorsolateral onlay buccal mucosal graft urethroplasty is preferable to dorsal onlay buccal mucosal graft urethroplasty for long segment anterior urethral stricture.

Conflict of interest: not declared

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Review Article

Medico-legal Investigation and Blood Group Serology

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Abstracts

Blood group serology includes the study of antigenic molecules present on the various cellular and soluble component of whole blood, together with the study of antibodies present in the serum and the lectins that recognize them and their interaction. Blood grouping is done for the purpose of person identification, for transfusion of safe blood to patient for correction of anemia, restoration of blood volume, transplantation either solid or liquid organ, for tissue typing and investigation in some sort of transfusion reaction. Blood grouping has important role in the serological identification of disputed individual with biological relationship i.e. disputed paternity, maternity etc. Grouping done not only from whole blood, red cell, plasma or serum, but can be done also from body fluid such as seminal fluid,, vaginal fluid, urine, saliva, gastric juice. We can also demonstrate the grouping from body tissue nail, hair, bone, dental tissue and soft tissue & also from stains. Blood and other body fluid collected from victim and investigation of criminal cases. If we know the blood grouping of criminal beforehand and preserved the grouping samples from all the listed criminal for grouping and DNA typing and also future need then we can be able to identify the criminal after criminality as because criminal always put some evidence on the victim about his offence during criminality. It will thus help our investigating department for the detection, identification and investigation in the case of criminality.

Keywords: *Blood group, Medicolegal investigation, DNA finger printing*

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Introduction :

History of blood transfusion is a fascinating subject. Before the origin of medicine itself ancient civilization recognized that blood was the source of life.1 Blood group antigens are genetically controlled and passes from parents to offspring, following mendelian inheritance. There are about 400 blood group antigens and about 73 blood groups in present notation, of them 23 are known as tabulated form.2 Blood grouping is done for compatibility testing, cross matching, safe supply of blood for trauma, surgery & anaemic patient.3 Blood group has important role in the serological identification of disputed individual with biological relationship. i.e. disputed paternity, maternity, kidnapping etc. We can do blood grouping from cell (forward grouping) and serum (reverse grouping) or from whole blood. We can also perform grouping from body fluid. Such as saliva, tears, sweats, urine, gastric juice, vaginal fluid, seminal fluid etc. Other than body fluid detection of blood grouping antigen done from body tissue,

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bone, nail, hair, dental tissue and stains. Blood – grouping antigen present in the stains has important role in identification of victim and investigation of criminal cases. Dr. Leone Lattes secured the release of a man, who the police believed had murdered his wife, pointing to a suspicious bloodstain on his coat. Dr. Lattes showed that the blood type did not match the wife's but was his own, confirming the man's story that it had come from a bleeding nose. In Russia two men acquitted of murder charges after it was found that blood on the dagger belonging to one of them did not match that of the victim.4 The blood group agglutinations can be demonstrated in stains on clothes due to semen, sweat, saliva, nasal secretion, urine and faeces in persons who are "secretors". This may be a corroborative evidence of the of the accused. The specificity of various blood group combinations is like that of the fingerprints. When an individual has some rare blood group, he can be identified with certainty. But when they are of common type, they are not of use. In case of grouping from bone, new bone will give the better result. Stain should be collected as early as possible. In case of grouping from nail of 6 months age will give good results.

Materials and methods

Following methods are used.

a. Routine grouping and grouping from stains

b. Bone

c. Dental tissue d. Hair

e. Nails

f. Soft tissues

g. DNA finger printing

Materials for grouping:

About 150mg of blood-stained material or about 75mg of dried blood and the control free from stain should be available for grouping test. The agglutinogenic specificity of blood stains is retained, even though the red cells are not intact, if the stains are properly observed. ABO retain agglutinogenic specificity within 3 to 5 weeks. The agglutinins present in the serum lose their specificity in the stains in a short duration. Most of the enzymes in the stains lose their specificities within 3 to 5 weeks. Bone, Dental tissue, will be fresh, hair shaft about 6 cm in length, nail about 3-6mg.5

Provision for investigation

Forensic science deals with problems of identity and blood group are excellent aides to this pursuits. The area in which investigation contribute valuable evidence are the identification of stains from body fluid and valuable information

can be obtained about the origin of blood stains in case of crime. There should be provision for investigation of blood group serology in the area where there is murder, rape, kidnapping and hijacking i.e. any blood stains found on suspect's clothing and / or weapons, accused as well victims or test revels other than blood stain such as nail, hair, bone, dental tissue, soft tissue, urine, saliva, gastric juice, seminal & vaginal fluid etc.6

Discussion

a. Routine grouping and grouping from stains

The agglutinogens of the ABO system are also in body tissues. They appear in water-soluble form and can be demonstrated in all the body fluids except the cerebrospinal fluid. They are not found in nerve tissue, epithelium, skin appendages, bone and cartilage. Persons who possess only the lipoidal form are known as 'non-secretors' while those who possess a water-soluble form are known as 'secretors'. The capacity of secreting these antigens in body fluids is controlled by a pair of allelic genes Se and se, the former being dominant over the latter. The individuals with genotype Se Se and Se se are secretors and those with the genotype se se are non-secretors. Secretors possess H antigen on their red cells irrespective of their blood group of the ABO system. However, the amount of H antigen is the highest on the red cells of O group persons. The ability to secrete agglutinogens into the body fluids remain constant through and is transmitted as a simple Mendelian dominant. The agglutinins, A and B are also present in the body fluids. M and n agglutinogens are widely distributed in the body tissues in a relative water soluble form. The Rh agglutinogens are widely distributed in the tissues but are not found in the body fluids, except the amniotic fluid. This has

role in identification of criminal eg. By routine grouping of blood sample collected from both the victim and accused or suspected assailant clothing & other sources. If the blood sample of victim are

of same blood group of sample collected from accused or suspected assailant clothing & other sources the result is conclusive i.e, Accused is culprit. During violence spouting of blood from accused or suspected assailant stained or plugged on victims body. If not same group the result is non conclusive i.e, spouted blood come from another sources, victims own blood if blood group is same of victims own. Blood stains may be found on clothing and person of suspect. If the accused alleges that the stain is of his own blood, it will have similar blood group systems and haptoglobin. If the victim has similar characters, the test is not conclusive. If there is discrepancy in blood group of the stain and the blood of the accused, then the stain is of some other person's blood; If the characteristics of the victim's blood coincide with those of the stain, an association is established between the suspect and the victim. Blood stain may be present at the scene of house breaking, e.g. on a broken window, if the culprit has cut himself. If the characters of these stains are similar to that of blood of the suspect, it establishes association. Blood stains may be present under the fingernails of assailant in a case of throttling. If there has been a struggle, blood stains derived from the accused may be found under the fingernails of the victim, due to scratching. Vehicles which have caused injury can be identified when they show blood resembling that of the victim.

Stains of clothes due to bugs, fleas, louse, mosquitoes, etc., are common. These stains are small in size and sharply angular in outline and are usually found on the inside of the garment. If the insects are crushed, fragments of the hair or scales of the insect and eggs may be found on microscopic examination.

b. Bone:

The determination of blood groups from bone tissue is more difficult than from other body tissues. In old bones, it is very difficult to determine the blood groups accurately. Carbohydrates, glycolipids and glycoproteins can be extracted as blood group substances from the bone-marrow. With fresh bone- marrow and spongy bone, blood groups can be determined with a relatively high accuracy.

Bone samples should be collected from the regions rich in red bone marrow, i.e., the proximal epiphysis of humerus and femur. In compact bone blood group substances are thought to originate not only from bone cells but also from red cells in vascular systems. Mainly ABH blood groups are detected in the bone, but with compact bone, groups A or B are frequently misjudged as AB. MN, Gm, PGM, 6-PGD and esterase D (EsD) have also been detected. Bone grouping is of help in the detection, identification & investigation of criminal cases.

C. Dental Tissue:

Absorption-elution technique is preferred for blood grouping of dental tissues including dentine, cementum and dental pulp. Enamel contains only traces of blood group substances and grouping is very difficult. Blood grouping of a denture and dental calculus is possible if the denture has been used for a long period of time due to the accumulation of saliva, cementum gives a weak reaction. Results are most accurate with dental pulp. Blood grouping of old teeth is possible if they are dry and not infected with bacteria. Heating at 2000C and over destroys Blood group substances. Apart from ABO, PGM, AK, ADA and 6-PGD can be identified from the dental pulp. It thus help the identification of crime & criminal.

D. Hair:

With absorption-elution technique blood groups can be determined by a single hair shaft about 6cm, in length. Blood grouping is practicable with scalp hair from fetuses and new born infants and also with grey scalp hair. If hair is heated at 2500C. it is impossible to detect blood groups. Hair left in water or soil for up to 6 months give good results. G6PD, PGM, esterase D, 6- phospho-glucomate-dehydrogenase, glyoxalase and a-l fucosidase (FUC) types have been detected from hair roots with sheath cells which help the detection & identification of crime by testing hair in the clenched of victim and accused hands and other body surface.

e. Nails:

3 to 6mg. nail is adequate to detect ABO groups. The human nails contain mainly ABN blood group antigens. MN blood groups have been detected in some cases. Marshall (1980) reported that proteins of human nail show a genetic variation with regard to both low-sulphur and high-sulphur protein fractions, which could serve as biochemical markers of individuality which demonstrated the identification of crime.

f. Soft Tissues

The mixed agglutination technique (the mixed agglutination reaction, MCAR) is useful for detecting ABH antigens on tissue cell surfaces in all kinds of soft tissues. This technique is suitable for the direct determination of blood groups on cell fragments adhering to weapons, bullets and clothing. Decomposed muscle acquires blood group antigens different from native one, and also many bacteria have blood group antigens similar to human ABH antigen.7 It is highly significant in the detection identification and investigation of criminal cases.

g.DNA Fingerprinting

Direct analysis of DNA shows extreme polymorphism in many areas in genome. These areas are non-expressed sequences, and are known as "Hyper variable regions"(HVR) of human genome. More than 1500 HVR's are present in human genome, which are examined. This method is as unique as fingerprints to an individual. Nucleated cells are the source of DNE for extraction from blood, semen, vaginal epithelial cells, tooth pulp, bone marrow, hair roots, muscle, skin, mucous membranes, etc. A sample is taken and from it the DNA is chemically extracted, purified and subjected to the action of restriction enzymes (Re) which are then separated on agar gel by electrophoreses. Next, the double stranded DNA are denatured into single strands and transferred from agar gel to solid nitrocellulose membrane by Southern Blotting technique. Then they are allowed to hybridize with radio-labeled single stranded DNA probe on the nitro-cellulose membrane. Excess probe is washed off and the hybridized DNA double strands[8] are visualized as bands by autoradiography on X-ray film put in direct contact with probe labeled membrane. These bands are individual specific. It is possible to identify a person from a single human cell. The chance that two people will share the same DNA fingerprint is less than one in 1030 times. It can be applied for tracing pedigrees, proving paternity/maternity, to establish family relationship and identification of mutilated dead bodies from their tissue remnants with the help of DNA fingerprints of close relatives. It can also be applied for detection identification & investigation of criminal cases by establishing same DNA fingerprint between victim and accused, as because DNA has the molecular basis of inheritance and generate image of banding pattern.[8]

Conclusion

Murder, rape, kidnapping and hijacking are common normal phenomenon in this modern civilization and in our day to day life. Modern science creates new weapons creating newer type of offences but fail to reduce crimes and offences. We can reduce this by creating awareness among general people about offences and crime, strengthening their unity against crimes. By introducing blood group serology in the detection, identification and investigation of criminal cases or by establishing forensic science laboratory in the country with collaboration between Transfusion Medicine & toxicology under home ministry or with the help of other SARC countries or opening the department of criminology on our country.

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Case Report

Preoperative Intentional Normovolemic Hemodilution with Autologous Transfusion: A Case Report

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Abstract:

Autologous blood transfusion (ABT) is a method of transfusing one's own blood at a later period after being collected in a earlier time. As autologous blood transfusion carries risk of Transfusion transmitted diseases along with various transfusion hazards, so ABT is a relatively safe method where applicable. Among the procedures of ABT, Acute normovolemic hemodilution (ANH) is one of the methods which can be used more efficiently, especially for surgical patients. ANH followed by ABT is rare in Bangladesh and we report a case of ANH in an elderly patient who had a rare blood group and underwent prostatectomy with moderate bleeding.

Keywords: *Autologous blood transfusion, Acute normovolemic hemodilution*

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Introduction:

The safest blood a person can receive is his own, donor blood is a foreign protein and is therefore antigenic[1]. Autologous blood transfusion (ABT) has been gradually attracting more attention due to the increasingly prominent problem of blood transfusion safety and blood shortage in recent years.[2] Acute normovolemic hemodilution (ANH) involves withdrawal of whole blood with concurrent infusion of fluids to maintain normovolemia followed by ABT accordingly.[3] Blood for blood is an ancient dictum being still followed perioperatively throughout the world. The extensive surgical procedures associated with major blood loss requiring large amount of blood are becoming more and more frequent and continue to increase the need for intra and post-operative replacement of whole blood and its components.[4] It is now realized that transfusion of homologous blood carries with it a very high risk of transmission of infectious diseases such as hepatitis B, C, D and E and human immuno-deficiency virus.[5,6] Several blood conservation strategies have been introduced with the aim of reducing homologous blood transfusion. Autologous transfusion by either preoperative autologous blood donation, acute normovolemic hemodilution (ANH) or intraoperative blood salvage have been definitely useful in reducing the use of homologous blood in surgical patients but failure of widespread acceptance is presumably a reflection of effort and cost[7]. Acute normovolemic hemodilution with autologous transfusion significantly reduces the requirement

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of homologous blood during and after surgery. It provides the only source of fresh whole autologous blood for transfusion and unlike preoperatively donated autologous units, blood drawn during hemodilution does not undergo biochemical alterations associated with blood storage. Platelet function is preserved and hypothermia associated with refrigerated blood administration is avoided because of its storage at room temperature[8]. This practice also eliminates the possibility of any clerical error that could lead to an ABO incompatible blood transfusion and death.[7] The reduced hematocrit also reduces intraoperative loss of RBCs. INH reduces Blood viscosity, decreases load on the heart and allows an increase in cardiac output without any increase in heart rate, Oxygen delivery to the tissue is also increased because an optimum hematocrit is achieved.[9] Practice of acute normovolemic hemodilution (ANH) followed by autologous blood transfusion in Bangladesh is very rare.Here we are going to present such a case.

Case Report

A 60 years old male, having body weight of 76 kg, non-smoker, non-diabetic, was admitted in a private hospital of Dhaka with a diagnosis of Benign Prostatic Hyperplasia for elective transurethral prostatectomy (TURP) surgery. He was a retired government servant from Dhaka district who served in Telecommunications Department of Bangladesh. He was normotensive, with normal cardiac, renal, hepatic functions and do not have any bleeding disorder. His blood group was AB Rhesus D Negative. During pre-surgical investigations, his hemoglobin level was found to be 10.5 gm/dL with PCV 38%. The concerned urologist asked him to arrange two units of whole blood which may or may not be used during or after operation. But the patient or his attendants found no way to manage this rare blood group in short time; even there were probability of postponement of tentative surgery. Probability of acute normovolemic hemodilution (ANH) followed by post-surgery autologous transfusion was discussed with the patient by the authors. Ultimately, he agreed for INH by the advice of surgeon and the authors. Under all aseptic and antiseptic precaution and with intensive monitoring of BP, CVP and pulse rate 2(two) units of whole blood were withdrawn from the patient by phlebotomy in CPDA-1 anticoagulant containing blood bag. Collected 2(two) units of blood were preserved in a Blood Bank refrigerator at adequate temperature properly without power failure. At the same time 1000 ml. of normal saline was infused concomitantly 4 hours prior to the operation. After this procedure the concerned surgeon performed prostatectomy under spinal anesthesia with moderate per operative blood loss. Under strict aseptic procedures, on the succeeding day (Post-operative day 01), Red cell concentrate (RCC) were prepared form two units of whole blood. These RCCs were transfused to the patient after proper and adequate checking and processing. Transfusion process was eventful. The patient eventually released from the clinic on Post-operative day 05, with a mental and physical soundness as he had his surgery completed effectively along with his own blood transfused to himself and the whole treatment period was successful.

Discussion

The provision of a service to provide safe blood whenever and wherever it is needed is an indispensible requirement for patient care. But as valuable and necessary as it is homologous blood transfusion is always associated with hazards which may be transfusion reactions of different grade and caliber, transfusion transmitted diseases (TTDs)[10]. Besides these two major problems, Alloimmunization and consequent immuno-suppression causing impairment of the organ defense mechanisms are also occurred following homologous blood transfusion. Apart from short availability of quality and safe donor population, stored bank blood also causes hemolysis of aging RBCs and disintegration of platelets and inactivation of coagulation factors. The substances used as preservatives/anticoagulants can have untoward effects to the recipient. Due to their religious believe some individuals are also not interested to receive blood from other individual (as in cases of people of Jehovah's witness and some other

people from other religious beliefs).[11] Considering all these limitations and hazards popularity of ABT is being increasing day by day over homologous blood transfusion over last few decades.[12] Hemodilution is part of the concept for avoiding or limiting the use of allogeneic blood and should be considered for patients undergoing elective surgery free of contraindications and presenting with an initial hemoglobin concentration > or = 12 g/dl and an anticipated blood loss of > or = 1500 ml. The efficacy of ANH, judged by the necessity to transfuse homologous blood, depends on the preoperative (initial) hematocrit, the target hematocrit (to which hemodilution is performed), and the preset intra- and postoperative transfusion trigger. In the past data from clinical trials have shown that in healthy subjects a target hematocrit of 20-25% (7.0-8.0 g/dl hemoglobin concentration) is feasible and safe for the patient. The safety as well as efficacy of acute normovolemic hemodilution in terms of reducing homologous blood transfusion requirements has been demonstrated in various clinical studies. ANH therefore is regarded an integral part of programs aimed at reducing the need for homologous blood, and can thus be successfully combined with preoperative autologous blood deposition, intraoperative blood salvage and carefully adjusted surgical techniques.[13]

Conclusion

Blood transfusion services of Bangladesh are almost in its initial progressive stage. Practice of component therapy is not fully established in peripheral regions of the country though this kind of therapy is widely used in advanced countries from early 60's. In the year 2000, 47% blood was collected form professional blood donors, 27% was collected from family replacement donors and 26% blood was collected from voluntary non-remunerated blood donors.[14]. Number of surgical procedures of diverse type has been increasing day by day in all sub-specialties, hence need for safe blood is also increasing proportionately. It is estimated that annual need of blood in Bangladesh is approximately 6,00,000 units, but we are far behind in managing them as voluntary blood donation is still not so established here.[15] Under the circumstances, Intentional Normovolemic Hemodilution (INH) demands newer interest to meet the need of increasing safe blood in the country, especially for elective surgical procedures. Although ABT is known to reduce the risk of allogeneic blood transfusion, it is not risk free and should be evaluated in relation to the patient's clinical picture. The combination of various methods of ABT in addition to the proper utilization of blood may consequently lead to the elimination[16].

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