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Editorial

Under-Graduate Medical Curriculum in Bangladesh : Its Rationale and Prospect

Ample interest has been generated by the new under-graduate medical curriculum after it came into force for all the medical colleges of Bangladesh from the session 2003 - 04. This is in the context of profound metamorphosis in the field of education in general and medical education in particular. Over the past few decades various types curricula have evolved and are in a state of flux. These are traditional, experiential, structure of the disciplines, behavioral, cognitive etc. In traditional curriculum, information and skills that have been worked out is transmitted to the students. In experiential curriculum, emphasis is given to develop high quality experience in the learners which will contribute to the intellectual, social and personal development. Structure of the discipline is a type of curriculum where only most fundamental concept is taught to the students and they learn how to derive the rest of the knowledge from those concept. Behavioral curriculum development needed to focus not on content but on what student should be able to do that is the behaviors they learn as a consequence of instruction. The theme of cognitive curriculum is that the single most important determinant of learning is what the learners actually know to be ascertained first and to be taught accordingly.

Similarly medical education has also evolved and a number of under-graduate medical curriculum and learning methods came into practice. These are evidence based and problem based learning, community oriented and community based curriculum. Evidence based medical curriculum is defined as a just and explicit use of current best evidence in making decision about the case of individual patients. Methods of learning in problem based education; students tackle the problem that forms the basis of the study. In community oriented medical curriculum, aim is focused on producing doctors who are able and are willing to serve their community and deal effectively with health problems in primary, secondary and tertiary levels. This type of educational program may be run in an institution without going to actual community. In community based curriculum learning activities occur mainly in the community. These curricula and learning methods may be suitably combined according to need.

These trends and innovation in medical education inspired the authority concerned to develop a curriculum for under-graduate medical education in Bangladesh. It inherited a traditional curriculum when it got its independence. That curriculum was failing to produce appropriately trained doctors for national health needs. This is another reason for which Bangladesh was confronted with the challenge of making a curriculum relevant to the needs of the times. So a curriculum was developed in 1988. This curriculum was expected to be community oriented needs and competency based. But evaluation by UNDP (1990) and Godfrey et al (1996) found it to be neither community oriented nor competency based and it needed improvement to fulfill the objectives. (Cited from curriculum for under-graduate medical education-2002)

Therefore another curriculum was developed and adopted for medical colleges of Bangladesh from the session 2003-2004. It has been acclaimed to be an ideal curriculum, which will be community oriented and competency based. But an objective analysis will show that there has not been any major change from the pre-

vious one. MBBS course of 5 years duration plus one year internship training has been retained. It has incorporated two instead of three professional examinations per year. This may improve result of the students in examination and will give some respite to the examiners but will have little effect on quality of doctors. First professional course has been reduced from 2 years to 1 and half year, this will definitely help the students to be exposed to clinical course early. But the contents and composition of the course has remained almost the same rather in some cases it has been extended thus creating a curricular overload. To overcome this, medical colleges run the course for longer period e.g. the students admitted in the session 2005-06 have already started their classes in March or April this year but will appear in exam in January 2008. That means the whole MBBS course has been extended beyond 5 years. This is further complicated by the decision of maintaining carry on system after 1st professional exam. This will create further curricular overload on the students who will fail in the 1st professional examination.

Similarly in other subjects also, the contents have remained the same as that of the previous curriculum or have been increased. The contents have been divided into core and additional contents. But purpose of additional contents has not been clearly spelt out. If all the students are to learn all the topics mentioned in additional contents these could have been included in the core contents or both core and additional contents could be called simply 'contents'.

In the curriculum learning objectives have been specified quite elaborately. Objectives were given in previous curriculum also but it was not as specific as of the present curriculum. This may have some beneficial effects on the outcome.

Integrated teaching is also included in the present curriculum as that of previous one. But this teaching has not been elaborate enough to meet the needs of our students to find relevance especially in study of basic sciences. The concept of integration vertical and horizontal is lacking or is very scarce to affect the result.

Teaching method in the curriculum has remained as before mostly on lecture based and teacher centered tutorial and practical classes. It is also discipline based education with very little integration. But current trend has transformed medical education in undergraduate level from this type of teaching method in to topic and problem based format encouraging student's greater participation and independent learning.

There has been a welcome change in the methods of assessment. Assessment provides impetus to the student for learning. Whatever the students learn if those do not come in the examination is not valued by the students. Inclusion of formative and summative assessment, multiple choice questions (MCQs) short answer question (SAQ), objective structured clinical and practical examinations (OSCE and OSPE) will go long way to maintain standards of our undergraduate medical education.

Excepting the assessment methods all other features of the curriculum has almost remained the same as that of previous curriculum. Modern trend and innovation like problem based learning (PBL), self directed learning (SDL), etc have not been incorporated in the curriculum. To make the curriculum community oriented how the needs of the community have been assessed has remained unclear. So, how much the present curriculum will deliver to make it community oriented remained to be seen.

The curriculum was developed with 6 years of hard work but the problem was that it was developed with donor fund. Naturally, interest of donors got the priority over the needs of the community. The making of the curriculum was also largely dependent on foreign consultant. A foreign consultant is not familiar with our customs, culture, belief and values as well as the disease pattern, health problems and priority health needs of the community. It has been claimed that opinion of almost all the professors of the concerned departments / subjects of all the medical colleges and a good number of resource personnel including the President, Bangladesh Medical and Dental Council (BMDC) and Deans of the faculty of medicine, Dhaka/ Chittagong/ Rajshahi uni-

versity were taken in workshops, review workshop and meetings to develop the present curriculum. But it must be remembered that trustable research findings and personal opinions are not currently utilized for educational management and decision making. Opinion based decision making in curriculum development involves debate over assumption and cherished tradition. Moreover many if not most of our teachers are not well-informed about the current trend and innovation of the medical education. In this regard it may be mentioned here that Center for Medical Education is doing a praiseworthy work by training our teachers in medical education.

In this situation, to bring our curriculum to conform to the modern trend and international standard following suggestions may be considered.

1. A trustable research should be made to determine the needs of our nation and accordingly our curriculum should be planned.

2. Learning methods in the curriculum should be problem based. The students should be brought to early clinical contact with provision for self directed learning. Integration, vertical and horizontal of different disciplines should be more extensive.

3. Curricular overload should be avoided, core contents, objective should be so designed that it fulfills the need of the society. More importance to be given to clinical competency. This may produce doctors with less knowledge but will have more abilities.

4. Teachers of medical colleges should have knowledge of current methods and techniques of medical education. For this it should be mandatory for all the teachers to get training in medical education for any promotion. At present a definite number of publication and certain years of teaching experiences are required for consideration for promotion.

5. There should be a system for continuous curricular evaluation on the basis of feedback from the stakeholders.

To conclude it may be said that it is still gratifying to have a curriculum. It may not have fulfilled all aspect aspired but has established a foundation for further improvement of medical education in this country. At present every effort should be made by every stakeholder to make it a success.

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Original article

Exercise Tolerance Test in Predicting Severity of Myocardial Ischemia in Patients with Stable Chest Pain

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ABSTRACT

This observational study was carried out in the department of Cardiology, Bangabandhu Sheikh Mujib Medical University (BSMMU), Shahbag, Dhaka from October 2002 to March 2003. A total of 54 patients presenting with Canadian Cardiovascular Society (CCS) class I and II severity of chest pain with mean age 49.88±8.44 yrs and male to female ratio 5.75:1 were included in the study. The main objective of the study was to predict severity of myocardial ischemia by Exercise Tolerance Test (ETT) determined Duke Treadmill Score (DTS). All patients underwent ETT in Bruce protocol. Coronary Angiogram (CAG) was done in all patients during the time of the study. After performing ETT, patients were categorized by DTS. The formula used to calculate the score was: exercise time- (5 x ST segment deviation)-(4 x treadmill angina index). The angiographic findings (significant >50% stenosis) compared with the severity of DTS. Among the patients, 12 (22.22%) patients were categorized as high DTS, 20 (327.03%) patients were intermediate DTS and 22 (40.74%) were low DTS. 31 patients had CAG proven coronary artery disease (CAD) and 23 patients were freed of CAD. In high DTS group, 91.66% of patients had angiographically proven CAD, 58.33% of them had triple vessel disease (TVD) while in intermediate and low risk group angiographically proven CAD were in 75% and 22.72% respectively of whom TVD was found only in 15% and 0% respectively. The results of ETT using DTS score satisfactorily correlate with the severity of stenosis and number of vessel involvement. So it is suggested that patient of high risk DTS should be undergone CAG directly for further evaluation. Intermediate risk and low risk needs further follow up and medical management.

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INTRODUCTION

Coronary artery disease (CAD) is the leading cause of morbidity and mortality all over the world and it is also increasing in the South Asian countries

including Bangladesh.^{1, 2} According to the World Health Organization (WHO), in 1999 there were 7.1 million deaths from CAD globally, and it predicts that in 2020, this figure will have risen to 11.1 millions and will hold first as a leading cause of death.³ Available data suggests that prevalence of CAD is more in Bangladesh than developed countries.^{3, 4, 5, 6} Usually chest pain is the first indicator of the

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myocardial ischemia. It is observed that there is poor correlation between the severities of CAD with the magnitude of chest pain in patient with stable angina. The clinical history and physical examination cannot also accurately predict the severity of the disease. The prognosis of patients with chronic stable angina is directly related with severity of the CAD. Severe the diseases worst the prognosis.⁷

Risk-stratification (It categorized the patients in high, intermediate and low risk groups according to severity of disease and mortality) in patient with stable angina is very vital for further diagnostic and therapeutic procedure. Non-invasive risk-stratification is the first choice in patients with stable angina of Canadian Cardiac Society (CCS)-class I and II. After the non-invasive test result, high-risk group patients should referred for coronary angiogram (CAG). Intermediate risk groups of patients are referred for myocardial perfusion imaging study and low risk group need not any further investigation and should remain in medical management.^{7, 8, 9}

The non-invasive methods used for predicting severity of ischemia as well as diagnosis of CAD are Exercise Tolerance Test (ETT), Single Photon Emission Computed Tomography-Myocardial Perfusion Imaging (SPECT-MPI) by exercise or pharmacological stress, Dobutamine stress echocardiography which are used in different clinical situation for detection, risk stratification and management of CAD.^{7, 10, 11}

ETT is widely used non-invasive method for diagnosing and risk stratification of patients with CAD. The procedure related mortality rate is low at the range of 1:2500.^{10, 12} ETT defined DTS is used for predicting severity and prognosis in patients with CAD.^{10, 13} Mark DB found that the treadmill score added independent prognostic information to that provided by clinical data, coronary anatomy and left ventricular ejection fraction.¹⁴

The present study was aimed to correlate the treadmill score with angiographic severity of CAD. The findings of the study are expected to improve the value of ETT for evaluation of patients with CAD in

regards of the severity of myocardial ischemia with better accuracy and help to avoid addition in testing with valuable savings of cost and time.

MATERIALS AND METHODS

This prospective study was carried out in the department of Cardiology, Bangabandhu Sheikh Mujib Medical University (BSMMU) Dhaka during October 2002 to March 2003. Fifty-four (54) patients who present with chest pain with known or suspected to have CAD and who fulfilled the selection criteria were included in this study. This study did not include any normal volunteer subjects (control).

Inclusion and exclusion criteria

Patient presenting with stable chest pain suggestive of CAD, both Q and Non-Q wave myocardial infarction (MI), both sexes and age ranges from 30-70 yrs were included into the study. Patients were excluded from the study that had acute chest pain of any origin, CCS-class III-IV chest pain, cardiomyopathy of any type, moderate to severe valvular lesion of any type, heart failure of New York Heart Association (NYHA) grade III-IV, un-interpretable ECG, ECG with resting baseline ST depression >1 mm, LBBB, WPW syndrome, uncontrolled hypertension with systolic >200 mm of Hg and diastolic >110 mm of Hg, mental or physical impairment leading to inability to perform exercise adequately, patient who were unwilling to give informed consent after adequate counseling. Selection of patients was performed by history and clinical examination, Electro-cardiographic study, echocardiography (M-Mode and two-dimensional) and evaluated by ETT and CAG.

History and clinical evaluation

Every patient was clinically evaluated by taking detailed history and physical examination during entry into study. The sign and symptoms of the patients were carefully evaluated giving special reference to chest pain (with CCS functional classification of chest pain, which is classified as, class I-no angina with ordinary activity. Angina with strenuous, rapid and prolonged exertion; class II-slight limita-

tion of ordinary activity; class III-marked limitation of ordinary activity and class IV-angina on minimal exertion or at rest), palpitation, shortness of breath (dyspnoea) and were noted. All patients' drug history was taken. Uses of drugs like beta-blocker, nitrates, calcium-channel blocker, digoxin and anti-arrhythmic drugs were noted properly and proper advices were given for withdrawal of any drug if necessary for exercise ECG stress study.

Electro cardiographic evaluation

Standard 12 lead ECG at rest was recorded in all cases along with lead II for rhythm strip. The ECG findings were emphasized on (a) rate, (b) rhythm, (c) QRS axis, (d) QRS-duration, (e) voltage criteria, (f) R-wave, (g) Q-wave, (h) changes in the ST segment, and (i) T- wave change.

Echocardiographic study

Two-dimensional and M-mode echo was used to detect wall motion abnormality, any complication of myocardial infarction and left ventricular systolic function.

Exercise testing

All patients performed a treadmill exercise testing with the Bruce protocol. The variables which were considered in ETT interpretation were age, basal and peak heart rate, blood pressure response, exercise time, METS, ST segment depression or elevation, symptoms especially chest pain, arrhythmia, dizziness, syncope and pre-syncope. All patients were categorized according to DTS into low, intermediate and high-risk group.

Treadmill Score: It was calculated as:

Exercise time - (5 x ST segment deviation in mm) - (4 x treadmill angina index)

Treadmill angina index defined as:

Index 0 = No angina during exercise.

Index 1 = Typical angina during exercise (non-limiting).

Index 2 = Angina was the reason to stop the exercise (limiting).

Coronary angiogram

All the study populations were subjected to CAG irrespective of DTS result as a part of the study. CAG

finding and DTS were carefully compared. Major epicardial coronary arteries were examined categorically to find out stenotic lesions. A significant lesion in a major coronary artery was defined as reduction of luminal diameter more than 50% adjacent to normal healthy segment.

The data obtain from the study was analyzed and significance of deference was estimated by using the t- test, chi-square, r-test and ANOVA as applicable. The sensitivity, specificity of ETT was calculated from the data using statistical formulas. Probability less than 0.05 considered as significant.

RESULTS

Of total 54 patients, there were 46 male patients and 08 female patients, with mean (\pm SD) age 49.88(\pm 8.44) yrs. Male to female ratio was 5.75:1(46/8). 39 (72%) patients were presented with chronic stable angina and 15 (28%) patients were presented with old MI of which 09 with inferior MI, 01 with anterior MI, 02 with antero-septal, 02 antero-septal plus inferior MI, and 01 with non- Q-MI. Chest pain with CCS-class II angina was present in 22(40%) patients and CCS-class I angina was present in 32(60%) patients. Hypertension was present with 37(69%) patients, DM was present in 19(35%) patient, dyslipidemia was in 31(57%), smoking / tobacco habit was in 20(37%), positive family history for ischemic heart disease (IHD) and SCD was in 13(24%) and obesity was present in 03(5%) patients.

There were maximal tests 43(79.62%) and sub-maximal tests 11 (20.37%). Exercise tests were terminated because of ST segments depression 1 mm or greater in 22 (40.74%) cases and exercise was terminated due to chest pain in 14 (29.09%). Maximum METS achieved was-13.4 and minimum METS achieved was 3 with mean METS 9.47. Maximum double product (DP) achieved was 47520, minimum DP achieved was 14300 with mean DP was 27003. Maximum heart rate achieved 135% of predicted heart rate and minimum achievement was 64% of predicted heart rate and mean was 93%. Maximum, minimum and mean basal blood pressure (BP) was

170/100, 90/60, and 139.6/86.20 mm Hg respectively. The maximum, minimum, and mean exercise BP was 240/100, 130/80 and 185/92.77 mm Hg respectively. The maximum, minimum, and mean exercise times were 11.42 minutes, 4.21 minutes and 10.31 minutes respectively in Bruce protocol. The maximum, minimum, and mean ST segment depression were 6.7 mm, 1.2 mm and 2.94 mm respectively. There was no ST elevation during ETT in the study population.

DTS categorized the entire subject into high, intermediate and low risk group. High risk group was 12(22.22%), intermediate risk group was 20(37.03%) and low risk group was 22(40.74%). (Table-I)

CAG proven CAD in high-risk DTS group was 11 (91.66%) patients, in intermediate risk DTS group was 15 (75%) patients and in low risk DTS group was 05(22%) patients. Whereas in high risk group 01

patient, in intermediate risk 5 patients and in low risk group, 17 patients found free of CAD by CAG. In high risk DTS there were 7 (58.33%) patients had TVD and 4 (33.33%) had double vessels disease, in intermediate risk DTS 3 (15%) had TVD and 7 (35%) patients had DVD whereas in low risk group TVD was nil and 3 (13.63%) had DVD (Table-II). There is positive correlation with the high DTS with severity of CAD ($P<0.001$) and no correlation with intermediate DTS group with severity of CAD ($P<0.09$) and good correlation with the low DTS group of patients with normal coronary artery (0.001). (Pearson's correlation)

The sensitivity and specificity of ETT in detecting CAD was 83.87% and 73.97% (Table III). The sensitivity of ETT in detecting CAD in high-risk DTS group was 91.66% in intermediate risk DTS group was 75% and in low risk DTS group sensitivity was 22.72%.

Table -I : Distribution of study population according to Duke Treadmill Score

Results of ETT	Low DT S	Intermediate DTS	High DT S
ETT negative n=22	22	0	0
ETT positive n=32	0	20	12
Total n=54	22(40.74%)	20(37.03%)	12(22.22%)

Table-II : Pattern of coronary artery involvement equal or more than 50% stenosis according to the distribution of DTS

CAG report	Low DTS	Intermediate DTS	High DTS
Normal n=23	17(77.27%)	05(25%)	01(8.33%)
SVD n =7	02(9.09%)	05(25%)	00
DVD n=14	03(13.63%)	07(35%)	04(33.33%)
TVD n=10	0	03(15%)	07(58.33%)
Total n=54	22	20	12

Table-III : Sensitivity, specificity, positive and negative predictive value and accuracy of ETT in diagnosing CAD

	Sensitivity	Specificity	Positive predictive value	Negative predictive value	Accuracy of the test
ETT(%)	83.87	73.97	83.87	73.91	74.07

DISCUSSION

In this study, the study population was divided into low, intermediate and high risk according to DTS derived from ETT. Risk stratified by DTS has clinical significance. It is anticipated that low-risk DTS group have average annual mortality of <1%, and in intermediate-risk DTS group the mortality rate 2-3 % while in the high-risk DTS group the mortality rate average >4%.^{9, 12, 15, 16}

The sensitivity of ETT in detecting CAD in high risk DTS group was 91.66%, in intermediate risk DTS group sensitivity was 75% and in low risk DTS group sensitivity was 22.72%, which shows that high-risk group had higher sensitivity. These findings in this study are consistent with the finding of Shaw where he found that patients with an intermediate DTS, the myocardial perfusion scan add additional information and efficiently guide for further patient management.¹⁷

In this study in high treadmill test score 7 (58.33%) patients had TVD and 4 (33.33%) had double vessels disease (DVD), in intermediate risk DTS 3 (15%) had TVD and 7 (35%) patients had DVD where as in low risk group TVD was nil and 3 (13.63%) had DVD. McNeer JF in his study showed that patients who had positive ETT at stage I or stage II had significant CAD and more than 60% of them had TVD (>50% stenosis) and patients with negative ETT and indeterminate ST segment response and who achieved stage IV and greater exercise duration had less than 15% prevalence of TVD. Though in their study they did not use DTS as parameter instead they used exercise stage but the objectives of study were same and the results were consisted with the present series.¹⁸ The findings of this study also similar with the finding of Islam's study, where they showed that DTS score is consistent with severity of CAD proven by CAG.¹⁹

Patients classified as low risk on the basis of ETT there was no convincing evidence that an imaging modality adds new significance to a standard exercise test. Patients with a low exercise test results can be treated medically without need for referral to

cardiac catheterization but in intermediate risk group myocardial perfusion imaging appears to be of value for further risk stratification. It was also recommended that patients with an intermediate risk stress test result should be referred for additional testing, where as patients with high risk category by stress test should referred for cardiac catheterization directly.^{7, 11}

CONCLUSIONS

From this series it can be concluded that ETT can be used as a high quality tool in diagnosing CAD and in predicting the severity of ischemia which is evidenced by good correlation between severity of CAD with DTS. Therefore patients with high risk DTS should undergone CAG directly. Intermediate risk DTS group of patients should undergone further evaluation. Low risk DTS group of patients needs medical management without further investigation.

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Original article

Effective Technique for Management of Paediatric Cataract with Post-Chamber Intraocular Lens Implantation

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ABSTRACT

Opacification of the visual axis is the most common complication following cataract surgery in children. In younger age groups, almost 100% opacification occurs within 2 years after surgery hinders to achieve good visual outcome. To evaluate the various techniques of paediatric cataract surgery as well as to find out an effective one, this study was done in the National Institute of Ophthalmology and Hospital, Dhaka during the period of January 2000 to December 2003. 60 eyes of 40 cataractous patients in paediatric age were selected. They were divided into three groups according to surgical techniques adopted; conventional extracapsular cataract extraction with posterior chamber intraocular lens implantation (ECCE PCIOL), scleral tunnel PCIOL and scleral tunnel PCIOL with posterior continuous circular capsulorhexis (PCCC) with anterior vitrectomy as A, B and C respectively. Each group contains 20 eyes. In our study, we found 75%, 60% and 0% of posterior capsular opacity in A, B and C groups respectively. ECCE PCIOL with PCCC with anterior vitrectomy was found to be the best technique among three.

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INTRODUCTION

The treatment of paediatric cataract whether congenital or developmental, is a common problem that challenges the ophthalmologists throughout the world. Early management of these cases not only restores the vision but also prevents further complications like nystagmus, strabismus or amblyopia. Removal of lens opacity and correction of gross refractive error in these patients is an emergency, because lack of timely intervention leads to severe

amblyopia.¹ In USA, majority of the ophthalmologists and pediatric ophthalmologists favour implantation of intraocular lenses in children below the age of two years. There is definite growing acceptance of the role of intraocular lenses in children because of recent development of continuous circular capsulorhexis, placement of intraocular lenses in the bag and posterior capsulorhexis with or without anterior vitrectomy. However, developing after cataract is a common postoperative complication of great concern.² In search of improved surgical technique with less postoperative complications, a comparative study among conventional extracapsular cataract extraction with posterior chamber intraocular lens implantation (ECCE PCIOL), scleral tunnel with

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PCIOL and scleral tunnel with posterior capsulorhexis and anterior vitrectomy with PCIOL were undertaken. The objectives were to evaluate the best technique with best visual outcome with fewer complications in the management of paediatric cataract.

MATERIALS AND METHODS

The study was conducted in the National Institute of Ophthalmology and Hospital, Dhaka during the period of Jan 2000 - Dec 2003. A total of 60 eyes from 40 patients of age 2 to 14 years were divided into three groups. In Group-A, 20 eyes underwent conventional ECCE with PCIOL, In Group-B, 20 eyes underwent scleral tunnel with PCIOL and in Group-C, 20 eyes underwent scleral tunnel with PCIOL with posterior capsulorhexis and anterior vitrectomy. Since the uveal tissue in a child is highly reactive, placement of IOL in the capsular bag had been tried. The patient was followed up 6 monthly for 2 years. Cataract that was present from birth is considered as congenital cataract and one that appears at later date considered as developmental. In case of bilateral cataract the most severely affected eye was operated first and the fellow eye 1-2 weeks later.

Informed written consent was obtained from the parents/ local guardians of each child. They were given information of the risks, benefits and alternatives to the procedure. The exclusion criteria of the study were age younger than 2 year, chronic uveitis, glaucoma, microphthalmos with micro cornea and dislocated lenses. Keratometry readings, A-scan biometry and comprehensive ophthalmic examinations were performed before surgery.

Mydriasis of the operated eye was achieved with 1% tropicamide and 10% phenylephrine eye drops. All the surgeries were performed under general anaesthesia by an experienced surgeon.

In group-A ECCE with PCIOL was done. Following a small conjunctival flap a 3 mm limbal incision was made to entry into anterior chamber. Anterior chamber was reformed with viscoelastic substance. A 26 G needle cystotome was introduced; a capsulorhexis or can opener capsulotomy was performed. Ringer's lactate solution was used for

intraocular irrigation. Lens matter was removed with Simcoe I/A canula. IOL was implanted either in the bag or in the sulcus in 3 cases after extending the incision. The wound was closed with 10/0 monofilament nylon suture. Injection gentamicin 20 mg and dexamethasone 2 mg was injected subconjunctivally into the lower fornix.

In Group-B scleral tunnel with PCIOL was done. A 6 mm wide frown scleral tunnel incision was given with razor blades, 2 mm posterior to corneoscleral junction. The two ends were around 4 mm behind the limbus. The tunnel was dissected anterior to the vascular arcade and entered into the anterior chamber with the help of crescent knife and 3.2 mm keratome respectively. Anterior chamber was reformed with viscoelastic substance. A 5-6 mm diameter continuous curvilinear capsulorhexis was prepared. The capsule was initially opened with 26 G bent needle cystotome to create a small capsular flap. This flap was grasped with capsulorhexis forceps and capsule was torn in continuous curvilinear manner to complete the anterior capsulorhexis. In few cases where capsulorhexis was not possible anterior capsulectomy was done using 26 G bent needle. In no cases side port entry was made. Ringer's lactate was used as the intraocular irrigating solution. In this solution 0.5 ml of 1:1000 adrenaline without preservative was added to maintain intraoperative mydriasis.

The lens cortex and nucleus were aspirated using I/A canula or expressed by visco expulsion. All residual cortical matter near the equator of the lens or over the posterior capsule was meticulously removed. The capsule and anterior chamber was filled with viscoelastic substance. The inner entry was extended with the help of same keratome. The posterior chamber intraocular lens was implanted into the capsular bag. The viscoelastic substance was removed with I/A canula. Subconjunctival injection of dexamethasone 2 mg and gentamicin 20 mg was given following which conjunctiva was closed with wet field bipolar electro-cautery.

In Group-C, the procedure was same as in Group-B. Posterior continuous circular capsulorhexis (PCCC) with anterior vitrectomy was done in all the cases. Postoperatively steroid, antibiotic,

diclofenac and short acting mydriatics (tropicamide 0.5%) eye drops were used routinely.

All the patients were examined daily during hospitalization for 3 days and were reviewed after 1 week, 2 weeks, 4 weeks, 3 months and then 6 months interval for two years. Postoperative refraction was performed at each visits and spectacle prescribed when the refraction was stable. Occlusion therapy of dominant eye for 75% to 90% of the child's waking hours-instituted in patients younger than 9 years following one week of surgery.

RESULTS

Out of 40 patients, 20 patients had bilateral cataract. Out of 20 bilateral cataracts, 13 were congenital cataracts and 7 were developmental cataracts. Twenty patients had unioocular cataract. Among them 8 had congenital cataract and 12 had developmental cataract. Among 40 patients, 23 (57.5%) were male and 17 (42.5%) were female.

Table I depicted the pattern of postoperative complications among the study groups. 90% of children achieved a binocular visual acuity of 6/60 or better and 10% of eyes had visual acuity less than

posterior capsules were ruptured during cataract extraction, necessitating anterior vitrectomy and sulcus fixation of the posterior chamber lens. Two patient had primary fibrosis of posterior capsule and plaque for which posterior capsulorhexis was performed. In three cases there was significant failure to remove the entire lens cortex. In two cases there were iris trauma and crystalline matters dropped into the vitreous. Postoperative inflammation was severe in this group. In two eyes there were iris capture and decentration of IOL in three eyes.

In group B, out of 20 operated eyes 12(60%) developed after cataract during follow up period that need Nd: YAG laser posterior capsulotomy. In four cases there were posterior capsular thickening and membrane like opacity that needs posterior capsulotomy and anterior vitrectomy. In two cases there were retained cortical matters. In two cases there were iris capture and in one case decentration of the IOL occurred.

In group C, out of 20 eyes only 2(10%) eyes developed ($p<0.01$) vitreous opacity. In one eye there was iris capture and in one eye there was decentration of IOL. The postoperative complication like

Table-I : Postoperative complications in 3 groups

Complications	Group A		Group B		Group C	
	(n-20)	%	(n-20)	%	(n-20)	%
PCO	15	75	12	60	----	----
Laser required	15	75	12	60	----	----
IOL decentration	3	15	1	5	1	5
Retained cortical matter	3	15	2	10	----	----
Vitreous opacity	0	0	2	10		

6/60. Among the three groups there were very little difference of immediate postoperative visual outcome but after six months follow up in group-C, patients had better visual outcome than other two groups.

Group-A had more astigmatism and out of 20 eyes 15 (75%) eyes developed posterior capsular opacity during the follow up period. In three eyes

severe uveitis was more in group-A patients. Systemic and topical steroid and topical cycloplegics like atropine or cyclopentolate were given for management of uveitis.

DISCUSSION

The main objective is to identify the appropriate procedure for management of paediatric cataract

with minimum complication. Previously paediatric cataract was managed by extracapsular cataract extraction followed by a prescription of aphakic spectacle. It is very difficult for the mother to watch and wear the heavy spectacle all the time for their baby. In case of unioocular cataract there should be every possibility to develop amblyopia and spectacle intolerance due to aniseikonia.^{1, 2}

Unilateral or bilateral contact lens rehabilitation has the advantage of providing accurate and changeable optical correction. Sometimes contact lens cannot be afforded by the parents, because most of the patients are from poor socio economic group are not able to preserve and handle the contact lens. During the last few years the recent development of capsulorhexis and placement of IOL in the bag has led to renewed interest for IOL implantation in children but controversy still surrounds the question of how much hyperopia in children should remain. Some ophthalmologists believe the child should make emmetropic or even myopic without concern for later myopia. They advocate management of amblyopia and the myopia later. Some argue the opposite viewpoints. Whatever the fact it is not always easy to calculate the IOL power in children. In that case one could implant standard +21.00 D lenses.²

The visual outcome of paediatric cataract is dependent on many factors such as type of cataract, age of onset, age at surgery, duration of opacity and compliance with optical rehabilitation and occlusion. This study was designed to determine the best and the most suitable surgical treatment for paediatric cataract at present time. Overall 90% of eyes the visual acuity was achieved 6/60 or better. Although there was no much variation in the final visual outcome in three different groups.³

The complication is less encountered with scleral tunnel surgeries. There was less chance of eye collapses and anterior chamber flattening. There was no iris prolapse during the procedure. It is much easier; surgeon is comfortable throughout the procedure.⁴ However tunnel dissections are difficult in children as their sclera is thin. Similarly rhexis is more difficult in children as it is not easy to tear anterior capsule, with experience it is not a problem at all. The

key to success is to start the rhexis more centrally to create a small capsular flap, then the flap is grasped with capsulorhexis forceps and the capsule is torn in a continuous curvilinear manner avoiding radial extension.⁴ Retinal detachment is well recognized and usually a late complication of cataract surgery in children. In this study there was no retinal detachments found during the follow up period.

In conclusion management of paediatric cataract is a definite challenge for the ophthalmologists throughout the world especially in developing country like Bangladesh. Round the year there has constantly been search for new technique that more effectively manage the pediatric cataract. In this study it is recommended that scleral tunnel with in bag intraocular lens implantation with posterior capsulorhexis with anterior vitrectomy is the best method for management of paediatric cataract where vitrectomy facility is available because it is self sealing, suture less, always maintain anterior chamber, less chance of injury to the endothelium, wound is more stable and secured, early visual rehabilitation, less chance of develop after cataract, no need of Nd: YAG capsulotomy, it is inexpensive and cost effective and it can practiced conveniently where vitrectomy facility is available.⁵

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Original article

Ectopic Pregnancy : A Five-year Review

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ABSTRACT

Ectopic pregnancy is a life threatening gynaecological emergency. It is easier to diagnose by a gynecologist but difficult for junior doctors and even specialist of other subject. Therefore description of clinical and management pattern will upgrade the skills in diagnosis to the generalist. To observe the clinical and management pattern which will help to formulate an easier and earlier diagnosis of ectopic pregnancy, a retrospective study was conducted in the Department of Obstetrics and Gynaecology, Jalalabad Ragib Rabeya-Medical College and Hospital from July 2000-June 2005. A total of 50 women diagnosed with ectopic pregnancy were included in the study. Data was retrieved from the chart order and the operation notes of all the patients diagnosed with ectopic pregnancy through a structured proforma. The studied variables were age, parity, clinical presentations, findings at laparotomy and types of operations were performed. Most of the patients were below 30 years age group and most of them were nulliparous(32). The most common presenting symptom was abdominal pain in 100% of patients whereas history of amenorrhea and vaginal bleeding were found in 44 (88%) and 40 (80%) patients respectively. About half of the patients (24) were presented with severe anaemia. Pregnancy test was positive in 94% cases and colpopuncture was positive in 49 (98%) cases. Tubal pregnancy was most frequent finding at laparotomy (92%). Unilateral salphingectomy was performed in 96% of cases. Therefore, ectopic pregnancy should be suspected in every woman of reproductive age who presents with unexplained abdominal pain, irrespective of amenorrhea and vaginal bleeding and whether risk factors were present in the past history or not. Simple bed side pregnancy test may be the most predictor of such cases.

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INTRODUCTION

An ectopic pregnancy is one in which the fertilized ovum becomes implanted in a site other than the

normal uterine cavity.¹ Among the ectopic pregnancy cases, more than 97 percent of ectopic pregnancies occur in the fallopian tubes. Another 2.5 percent occur in cervix or abdominal cavity and the remainders (0.05%) are found in the ovary.² Sites of ectopic pregnancies can not accommodate placental attachment or a growing embryo, therefore the potential

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for rupture and hemorrhage always exists. Ruptured ectopic pregnancy is one of the gynaecological emergencies. It is a leading cause of maternal mortality in the first trimester and accounts for 10- 15 percent of all maternal deaths.²

Incidence is increasing throughout the world due to increase incidence of pelvic inflammatory disease, induced abortion, use of intrauterine contraceptive devices, progesterone only contraceptives pill and artificial reproductive techniques.³ These risk factors share a common mechanism of action- namely interference with fallopian tube function. The mechanism can be anatomic (e.g. scarring that blocks the transport of the egg) or functional (impaired tubal mobility).⁴

Ectopic pregnancy is easily diagnosed by ultrasound technology and determination of beta subunit of human chorionic gonadotropin level (hCG). However the diagnosis remains a challenge particularly in Bangladesh where majority of people are poor, living rural areas with no proper investigative facilities as well as they are ignorant about preventive health measures. Therefore ectopic pregnancies present here with clinical picture of acute rupture. Classic triad of symptoms of acute rupture is short amenorrhea (6 to 8 weeks) followed by abdominal pain and per vaginal bleeding.² Pain is characteristic which is acute agonizing or colicky nature affects the lower abdomen and the patients remain agony in between colic.² Patients may present with syncope and/or hypovolemic shock. Physical findings of abdominal bleeding such as hypotension, marked abdominal tenderness with guarding and rebound tenderness suggest a leaking or ruptured ectopic pregnancy. Abdominal pain (83.6%), amenorrhea (77.5%) and irregular vaginal bleeding (73.7) were the most common symptoms of ectopic pregnancies found in a Nigerian study.⁵ However, lower incidence of abdominal pain (69.3%) was found in the patients of Nepal in addition syncopal attack was also found as presenting symptom in 21.3% cases.⁶

Most of the ectopic pregnancies are seen in the younger age group. In a study on Nepalese popula-

tion it was found that all cases of ectopic pregnancy age ranged from 26- 30 years.⁶ Another Nigerian study also demonstrated almost same age incidence of ectopic range form 20-25 year age group among them 49. 3% were nulliparous.⁵

The simple standard urine pregnancy test is 99 percent sensitive and 99 percent specific for pregnancy. It is a qualitative rather than quantitative measure that identifies the presence of hCG in concentration as low as 25 mIU per mL. In some centers, ultrasound identification and serum concentration of beta hCG level often use as a combined diagnostic approach. Ultrasound identification of an intrauterine gestational sac and a serum beta hCG that exceeds 6500 IU/l rules out ectopic pregnancy. A sonographically normal uterus and serum concentration of beta hCG that does not exceed 6500 IU/l is highly indicative of ectopic pregnancy.⁷ Diagnostic laparoscopy to confirm the presence of tubal pregnancy has become routine since technical improvements restored interest in the laparoscope in the early 1960s.⁷ Colpopuncture is used in less frequently because of ultrasonography can reveal any free fluid in pouch of Douglas. Thus the procedure is used primarily when ultrasonography is not available. A colpopuncture that is positive for non clotting bloody fluid strongly suggests the presence of bleeding ectopic pregnancy. The finding of yellow or straw-colored fluid is more consistent with a ruptured ovarian cyst than an ectopic pregnancy.⁴

About 40-50 percent of ectopic pregnancies are misdiagnosed at the initial visit to an emergency department.^{8, 9} Inability to identify risk factors is the common and significant reason of misdiagnosis. A proper history and physical examination remain the foundation for initiating an appropriate work-up that will result in the accurate and timely diagnosis of an ectopic pregnancy. Therefore study on different aspects of ectopic pregnancy help us to generate practical guidelines for timely and early management of the patients.

MATERIALS AND METHODS

A total 50 cases of ectopic pregnancy were

included in the study. The patients were admitted in the Department of Obstetrics and Gynaecology, Jalalabad Ragib-Rabeya Medical College Hospital, Sylhet from July 2000 to June 2005. Jalalabad Ragib Rabeya-Medical College and Hospital is a tertiary care teaching hospital providing gynecological and emergency obstetrical care through indoor and out patient facilities. Most of the patients were admitted through emergency department but some of the patients were wrongly diagnosed at emergency room and admitted surgery and medical departments of the hospital. However, the misdiagnosed patients were referred to the Gynaecology department subsequently.

A detail history of the patient at admission was taken from all the patients including the age, parity and clinical presentations. The patients were examined specially for anaemia and signs of intra-abdominal bleeding. They were routinely investigated by pregnancy test, Hb%. All patients were meticulously resuscitated with blood, I/V fluid, antibiotics and underwent for laparotomy followed by either salphingectomy or salpingoophorectomy. Colpopuncture was done in all patients before operation.

RESULTS

Figure 1 shows the distribution of patients according to parity. Most of the patients were nulliparous. In this study group, 80 percent patients were from younger age group (< 30 years). Table I depicts the fact. Abdominal pain is the main presenting

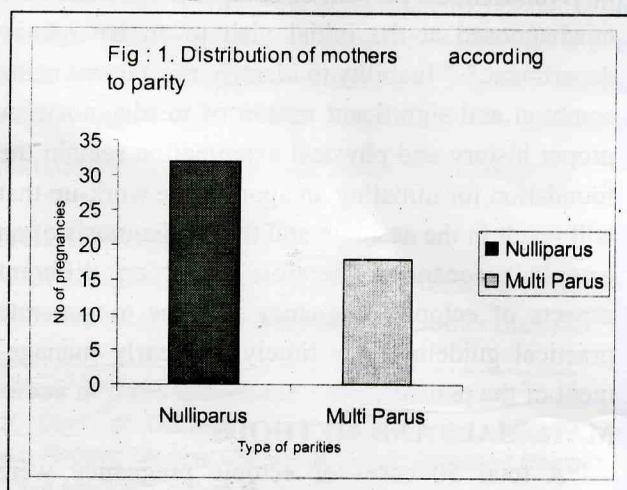


Table-I : Distribution of mothers according to age

Age	Number	Percentage
Less than 30 yrs	40	80%
More than 30 yrs	10	20%

Table-II : Symptoms analysis

Symptoms	Present No (%)	Absent No (%)
Amenorrhea	44(88%)	6(12%)
Abdominal Pain	50(100%)	0(0%)
P/V bleeding	40 (80%)	10 (20%)

Table-III : Degree of anaemia estimated clinically and by HB%

Clinical	level of Hb (gm/dl)	No of mother (%)
Severely anaemic	<6.5 gm/dl	24 (48%)
Moderately anaemic	6.6 gm/dl 8.5 gm/dl	14 (28%)
Mildly anaemic	8.6 gm/dl ~10gm/dl	12 (24%)

Table-IV : Urine for pregnancy test (strip method)

Pregnancy test	No	Percentage
Positive	47	94%
Negative	3	6%

symptom in all patients. Per vaginal bleeding and amenorrhea was the associated symptoms found in 40 (80%) and 44 (88%) patients respectively. Among the patients complaining amenorrhea, 20 patients have history of amenorrhea for 5-6 weeks whereas others have the history more than 6 weeks. Symptom analysis was presented in table II. About half of the patients (24) were presented with severe anaemia (Hb% < 6.5 gm/dl). Among the remainder half, moderate and mild anaemia was detected in 14 and 12 patients respectively. (Table III) Bed side pregnancy test was performed in all patients. Positive result was found in 47 cases (94%). The

Table-V : Colpopuncture findings

Colpopuncture	Number	Percentage
Positive	49	98%
Negative	1	2%

Table-VI : Laparotomy findings

Type of ectopic	Number	Percentage
Tubal Pregnancy	46	92%
Abdominal Pregnancy	1	2%
Corpus luteum cyst rupture / Ovarian Pregnancy	3	6%

result of pregnancy test was presented in table IV. Table V shows the distribution of colpopuncture findings of all patients. It was positive in almost all cases (n - 49). Maximum ova (46) were implanted in the fallopian tube. One fertilized ovum was also implanted in abdominal cavity. (Table VI) All patients were managed surgically. Unilateral salphingectomy was done in 96% patients. Unilateral salphingoophorectomy was done in remainder cases. (Figure 2)

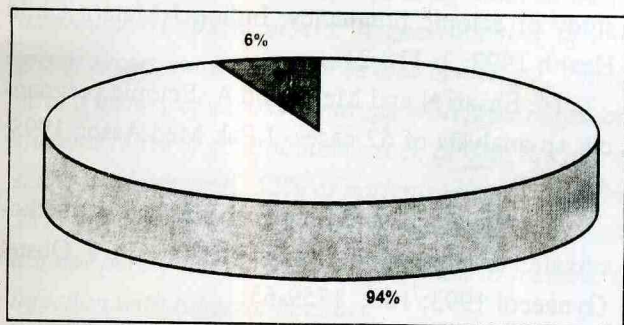


Figure-2 : Pie chart showing the distribution of types of operations of the present series

DISCUSSION

All cases of ectopic pregnancy were presented with abdominal pain and variable degrees of amenorrhea and per vaginal bleeding. The presenting symptoms of our study almost correlates with the studies done in Nigeria and Nepal.^{5, 6} However, the incidence of abdominal pain is somewhat less in

these studies. This may be due to individual variation in pain perception and different stages of severity of ectopic pregnancy. They were diagnosed clinically and with simplest investigative techniques like Hb% and urinary pregnancy test. Ultrasonographic evaluation was not encouraged in this situation as this facility is not exists in all rural health care facilities of Bangladesh. Therefore colpopuncture was practiced as a alternative procedure for diagnosis of ectopic pregnancy. However this procedure needs enough skills and could not be done without full surgical setting. For this reason, it was done on operation theater just before laparotomy.

12 (24%) patients were misdiagnosed in emergency room and were admitted in surgical and medical units of this hospital. However, latter on they were properly diagnosed and referred to gynecology unit. It was fortunate for us that all misdiagnosed case were properly managed despite the delay in initiating definitive management. That's why, through this paper, we at least tried to disseminate the clinical picture and method of early diagnosis of ectopic pregnancy.

Most of the patients were from younger age group which is consistent with the studies done in Nigeria and Nepal.^{5, 6} In Bangladesh, girls are usually married around 20 yrs of their age and next 10 years they remain reproductive. Pregnancy test was done with strip method which can diagnose pregnancy rapidly.¹⁰ This hospital offers other methods of detection of pregnancy however they are time consuming and therefore not practiced in these cases. Though it is a qualitative test, it gave accurate result in 98 % of cases. The test is simple, could be performed bed side of a patient.¹⁰ And we think it is a suitable method for resource-constrained countries like Bangladesh. Serum β HCG is more reliable indicator because very few false negative.¹¹ But in our hospital it is not available during study period.

Unilateral salphingectomy was performed in maximum cases that indicate common involvement of fallopian tube. This procedure is usually performed in ectopic pregnancies with healthy ovaries.

The procedure was the major operation performed in other study conducted in India, Nepal, and Pakistan.^{13, 6 & 14}

Currently there is enough evidence in favour of efficacy of methotrexate in the treatment of ectopic pregnancy, and about 45% of all ectopic pregnancy can be managed with methotrexate.¹⁵ Are we in a position to offer that? Our Answer is no up till now, as our all patients present with ruptured state and haemodynamically unstable. They are not the candidate for conservative treatment with methotrexate. But it may be possible in future when β HCG estimation will available with low cost and all women will come to ANC as earliest time.

In conclusion awareness among obstetrician gynaecologist, physicians, surgeons, general practitioners and emergency doctors is essential in making a timely diagnosis of ectopic pregnancy. A simple pregnancy test should be the first step in investigating a suspected ectopic and should be incorporated in every protocol or guideline in the management of women of reproductive age with abdominal pain and abnormal vaginal bleeding.

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Original article

Epidemiology and Clinical Pattern of Genital Ulcers in Male Attending the Skin and VD OPD of Sylhet MAG Osmani Medical College Hospital

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ABSTRACT

Genital ulceration is a commonly encountered in both sexes and is often due to sexually transmitted infections (STIs). A cross-sectional analysis of clinical patterns and epidemiology of genital ulcer diseases was conducted among male attending at Skin and VD OPD of Sylhet MAG Osmani Medical College Hospital from January to July 2004. 50 males with genital ulcers were selected randomly. Their age incidence, marital status, occupation, socio-economic condition, educational status and causes of genital ulcer were studied. The patients were presented with chancroidal 15 (30%), syphilitic 13 (26%), scabetic 12 (24%), pyogenic 03 (06%), herpetic 02 (04%), fixed drug induced 02 (04%), post operative 01 (02%), traumatic 01 (02%) and tubercular 01 (02%) ulcers. Highest number of ulcers was found in the age group of 16-30 years and this group shows more active in sexual behaviour. Unmarried groups (60%) had suffered more and most of them gave a history of exposure mainly with prostitutes and street girls. 50% of genital ulcers were observed among students. 70% of genital ulcers seen among the literate group (literate means male have experience of primary school and onward). 52% of patients were come from middle socio-economic class, 20% from upper class and 28% from lower socio-economic class. It is concluded from the study that the causes of genital ulcers in male are not purely due to STIs but also due to trauma, complication of operative procedure, drugs toxicities and infection with tubercle bacillus.

[Jalalabad Medical Journal 2006; 3(1) : 21-5]

INTRODUCTION

Genital ulceration remains one of the most important health problems of major proportion of both sexes and is often due to STIs. No thoughtful

person can doubt that genital ulcers have been and still are health problem of major section of general population. Throughout the history they have plagued mankind, killing and crippling untold millions.¹

Cases of genital ulcers are widespread throughout the world and primarily involving young persons between the age group 15-30 years. Ignorance, unawareness of danger of genital ulcers, lack of sex

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Table-VI : Distribution of patients according to profession

Profession	No of patients	Percentage
Students	25	50
Business man	08	16
Service holder	05	10
Rickshaw puller	04	08
Servant	04	08
Others	04	08
Total	50	100

Table-VII : Source of genital ulcers (n=50)

Source of contact	No of patients	Percentage
Prostitutes	26	52
Street girls	12	24
Others (including non STIs)	12	24
Total	50	100

suffered than illiterates. Among the studied population, patients from middle socioeconomic class had suffered mostly. (Table V) Table VI shows profession of attended patients. Students were suffered more than the others groups. 52% of patients had got the ulcer from contact with prostitutes. (Table VII)

DISCUSSION

In the course of this work, 50 genital ulcers were studied selected randomly. It was accurately observed the age incidence, marital status, socio-economic condition, education and relation of genital ulcer. The diagnosis was made on the basis of laboratory reports as well as clinical presentations. Among the diseases, chancroid 15 (30%), syphilis 13 (26%), scabetic 12 (24%), pyogenic 03 (06%), herpes progenerialis 02 (04%), fixed drug eruption 02 (04%), post operative 01 (02%), traumatic 01 (02%) and tubercular ulcer 01 (02%) were found. The

occurrence of chancroids were found high incidence among the 50 cases of genital ulcers and the second highest in number were syphilis. The causative organism of chancroid, *H. ducreyi*, that is resistant to penicillin. However, parenteral penicillin is frequently prescribed by the unregistered doctors for genital ulcer due to chancroid. As a result, maltreated patients with chancroid were presented more in OPD of skin VD department.

The age incidence (Table - 2) shows that genital ulcers were maximum among the age group of 16-30 years. This age group shows more active in sexual behaviour and is more important factors for prevalence of STD in the community. The incidence of marital status shows that unmarried group (60%) is more suffering from genital ulcer. Most of them gave the history of exposure mainly prostitution (52%) and street girls (24%). However, no one gave the history of homosexuality.

The maximum 50% of genital ulcers were observed among students. It was due to lack of knowledge, education and they were not known about sex and hazards prostitution.²

The literacy study shows that 76% out of 50 cases of genital ulcer (literate means males have experience of primary school onward). The incidence of penile ulcer among the literate person may be due to lack of sex education and unawareness of sexually transmitted diseases.³

Socio-economic condition shows more number of attendances belongs to middle class (52%) and least number in upper class (20%) and lowers in lower socio economic class (28%). Less number of attendances in upper class in the hospital is due to personal shyness and excessive rush in the hospital or may be due to their ability for treatment in private clinics and lower attendance of lower socio-economic class may be due to unawareness of hazards of the disease.⁶

It is revealed from the above findings that the problems of the genital ulcer are not purely medical one but also traumatic, post operative, fixed drug eruption and tubercular ulcer.⁴ Lastly the govern-

ment has to work hard simultaneously to prevent and control the sexually transmitted diseases (STDs) and thereby to build a healthy nation.

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Original article

Activity of *Momordica charantia* on Multi-drugs Resistant Group A Beta Hemolytic Streptococcus *in vitro*

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ABSTRACT

Over the years scientists have verified many of the traditional uses of *Momordica charantia* (bitter melon) that continues to be an important natural remedy in herbal medicine system. The ethanol crude extracts (500 µg / disc) and two different fractions (Methanol and Di-chloromethane) of both seeds and leaves (200 µg / disc) of *Momordica charantia* (family- Cucurbitaceae) exhibited a significant inhibitory activity against a strain of multi-drugs resistant group A beta hemolytic streptococcus. The supplied strain of group A beta hemolytic streptococcus were found multi-drugs resistant to some conventional antibiotic, which was previously reported by the Microbiology Department of Dhaka Pediatric Hospital, Shere-E-Bangla Nagar, Dhaka. The zone of inhibition produced by the crude extracts and two different fractions (methanol and di-chloromethane) of both seeds and leaves were found to be range of '7-20' mm. The di-chloromethane fractions of leaves showed highest zone of inhibition (20 mm) whereas same fraction of seeds showed least zone (7 mm) of inhibition at a dose of 200 µg / disc showed a little antistreptococcal activity. Further studies should be continued for exploring the bio-active constituents from abovementioned different fractions of *Momordica charantia*.

[Jalalabad Medical Journal 2006; 3(1) : 26-31]

INTRODUCTION

Momordica charantia Linn. (family-Cucurbitaceae), locally called Karela (English name-Bitter melon) is a monoecious climber. The stem is slender, more or less pubescent; leaves are sub-orbic-

ular, 5-7 lobed, hairy; the flowers are yellow and solitary; fruits are pendulous, fusiform, beaked and ribbed with numerous tubercles; seeds are brownish, compressed and embedded in red pulp.¹ The plant usually grows in all over Bangladesh in all seasons. The plant has been reported to have various traditional usages in different ailments by the folk practitioners.² Recent clinical studies showed that leaf extract of bitter melon have demonstrated broad

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spectrum antibacterial activity.³ The fruit and fruit juice have also demonstrated the same type of antibacterial activity.³ Bitter melon, like several of its isolated plant chemicals also have been documented with *in vitro* antiviral activity against numerous viruses including Epstein-Bar, Herpes and HIV viruses.⁴ Another study showed that it has significant anti mycobacterium tuberculosis properties.⁵ Previous another study demonstrated that oral administration of fresh fruit juice of bitter melon lowered blood sugar level.⁶ V insulin, a polypeptide from fruits and seeds rapidly decreased and normalized blood sugar level.⁷ It was also reported that bitter melon were found to be anthelmintic activity.⁸ A significant decrease in tri-glyceride, low density lipoprotein and a significant increase in high density lipoprotein were observed following administration of bitter melon.⁹

Group A beta hemolytic streptococci,¹⁰ the causative agent for streptococcal sore throat (tonsillopharyngitis) a major global health problem. This disease is found to occur among 5-15 aged group children. Acute glomerulonephritis or acute rheumatic fever may develop following an acute attack group A beta hemolytic streptococcal infection. Chronic valvular heart diseases develop subsequently in at least half of those affected by rheumatic fever with carditis. Predominantly affected valve is mitral (>90%) and then less commonly the aortic, tricuspid and pulmonary.¹¹

Even though a number of drugs (such as amoxicillin, tetracyclines, phenoxymethyl penicillin, cotrimoxazole, erythromycin, cephalexin, etc.) are available but due to their potential adverse effect, hypersensitivity,¹² multi-drugs resistance to microorganism,¹² a new generation drug with better activity is often needed to discover.

Due to the fact that, bacteria are becoming more and more resistant to antibiotics, this research is designed to evaluate the anti-streptococcal properties of a medicinal plant '*Momordica charantia*' belonging to family Cucurbitaceous, which is strongly bioactive as previously described, in the hope of

finding out an active anti-streptococcal principles. Thus the plant was selected for finding extracts and fractions having suitable biological activity.

MATERIALS AND METHODS

Study Places

The study was carried out in the department of Clinical Pharmacy and Pharmacology, Dhaka University, from 16-09-2005 to 15-11-2005. All phytochemical preparations of *Momordica charantia* (Kerala) were carried out in the department of Clinical Pharmacy and Pharmacology and all microbiological parameters were tested in the department of Microbiology, University of Dhaka.

Plant material

The seeds and leaves of *Momordica charantia* were collected from local vegetable market, Uttara, Dhaka and Shibpur, Norshingdi respectively and identified by the Department of Botany, University of Dhaka, Bangladesh.

Extraction and fractionation

The air-dried and powdered plant materials (leaves part: 51 gm and seeds part: 19 gm) were prepared. Powdered leaves and seeds were dissolved in 1 litre and 500 ml ethanol respectively for one week. After one week, both extract were collected and powdered leaves and seeds were again extracted with 1 liter and 500 ml ethanol for two times, as a result total extract of leaves and seeds were 3 litre and 1.5 litre respectively. These two extracts were filtered individually through a fresh cotton bed. The filtrates were then evaporated under reduced pressure at 40 0 C using Buchii Rotary Evaporator to obtain a gummy concentrate of two extracts. Primary anti streptococcal screening of both ethanol crude extract of leaves and seeds were done, which showed promising anti-streptococcal activity. The sequential fractionation of ethanol crude extract of leaves and seeds were done by using method of column chromatography.

The column was packed with silica gel (Kiesel gel 60, mesh 70-230). Slurry of silica gel in hexane was added into a glass column having the length of

48 cm and 2 cm respectively. When the desired height of adsorbent bed was obtained, a few hundred milliliter of hexane was run through the column for proper packing of the column. The sample was prepared by adsorbing 5 gm of methanol crude of seeds into silica gel, allowed to dry and subsequently applied on the top of the adsorbent layer. The column was then eluted with hexane (100 ml x 10), then gradually with di-chloromethane (DCM) (100 ml x 10) and methanol (100 ml x 10) respectively. A total 1000 ml (100 ml x 10) hexane fraction, 1000 ml (100ml x 10) DCM fraction and 1000 ml (100 ml x 10) methanol fraction were collected. 6 gm of methanol crude extract of leaves was fractionated with hexane, DCM and methanol in the same manner. All of the fractions of seeds and leaves allowed to air dried. Total wt. of the fractions was - 1. Hexane fraction of seeds 0.77 gm, 2. DCM fraction of seeds 0.85 gm, 3. Methanol fraction of seeds 0.91 gm, 4. Hexane fraction of leaves 0.79 gm, 5. DCM fraction of leaves 0.98 gm, 6. Methanol fraction of leaves 1.05 gm.

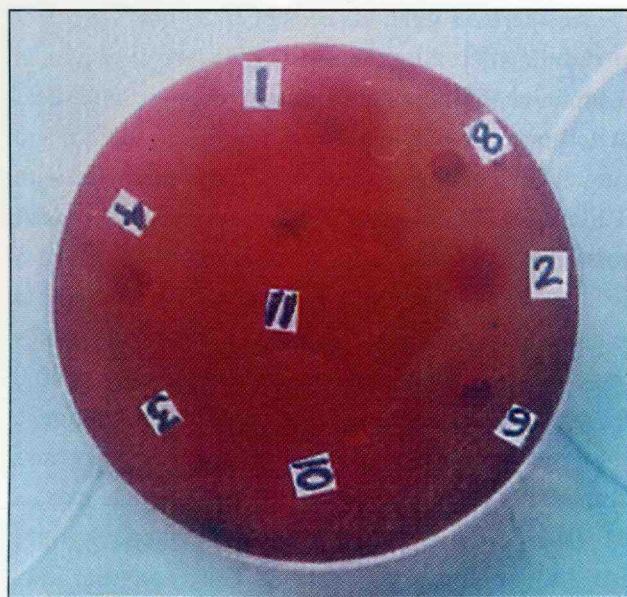


Figure-1 : 1-Crude extract of seeds of *M charantia*, 2-Methanol fraction of seeds of *M charantia*, 3-DCM fraction of seeds of *M charantia*, 4-Hexane fraction of seeds of *M charantia*, 8-Erythromycin, 9-Cephalixin, 10-Azithromycin, 11-Phenoxymethyl Penicillin

Test organism

The bacterial strain (Group A beta hemolytic streptococcus) was collected from the Microbiology department, Dhaka pediatric hospital, Shere-e-BanglaNagar Dhaka (DSH-MCD-344) with its specific identification and drugs resistance.

Sample preparation

The solution of crude extract and different fractions of both leaves and seeds (hexane, DCM, methanol) were prepared by dissolving a measured amount of samples (1mg) in definitive volume (1ml) of solvent and applied on sterile matricel filter paper disc (500 μ gm / disc and 200 μ gm / disc respectively) by using micro-pipette. Seven (07) antibiotic discs (artificially prepared in different concentration) were used as reference.

Anti microbial assay

The antimicrobial activities of crude extracts, different fractions of seeds and leaves of *Momordica charantia* were determined by agar disc diffusion method technique.¹³ The supplied strain of microorganism (group A beta hemolytic streptococcus) was

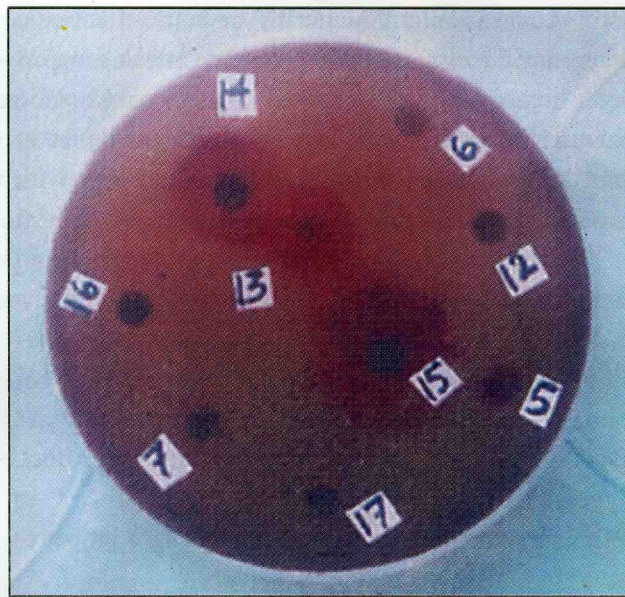


Figure-2 : 5-Amoxycillin, 6-Co-trimoxazole, 7-Cephalixin, 12-Ampicillin, 13-Crude extract of leaves of *M charantia*, 14-Methanol fraction of leaves of *M charantia*, 15-DCM fraction of leaves of *M charantia*, 16-Hexane fraction of leaves of *M charantia*, 17-Negative control

transferred from subculture to the blood agar medium containing 20 ml of freshly prepared sterilized blood agar medium. The organism was distributed evenly using pore plant technique into each of the Petri dishes used at temperature of 37⁰ C. When the medium became solidified, known antibiotics and the samples impregnated discs were placed aseptically to agar plate and kept in a refrizarator for 24 hours, the diameter of the zone of inhibition around each disc was measured and expressed in mm.¹³⁻¹⁴ (figure 1 & 2)

RESULTS

Among the different fractions and extracts of leaves and seeds of *Momordica charantia*, DCM fraction showed highest zone of inhibition (20 mm). Hexane fraction of both leaves and seeds did not produce any inhibition and crude extract of both leaves and seeds showed almost similar range of

inhibition. However, DCM fractionation increased the zone of inhibition in both leaves and seeds. The increment was more in leaves than in the seeds. Most of the antibiotics were resistant to the supplied streptococcus. However, standard phenoxymethyl penicillin disc showed greatest zone of inhibition of 31 mm. Macrolid antibiotics such as erythromycin and azithromycin produced 06 and 22 mm zone of inhibition respectively. (Table I)

DISCUSSION

Streptococcal sore throat (tonsilo-pharyngitis) is a common health problem in Bangladesh. The causative agent is Group A beta hemolytic streptococcus.¹⁰ Acute glomerulonephritis or acute rheumatic fever may develop following an acute attack group A beta hemolytic streptococcal infection among the 5-15 aged group children. This may result chronic valvular heart disease development subse-

Table-I : Activity of crude extracts, different fractions of *Momordica charantia* and different antibiotic agents on supplied multi-drug resistant streptococcus

No	Samples	Dose (µgm / disc)	Zone of inhibition (in mm)
1	Crude extract of seeds	500 µgm / disc	13
2	Methanol fraction of seeds	200 µgm / disc	10
3	DCM fraction of seeds	200 µgm / disc	07
4	Hexane fraction of seeds	200 µgm / disc	--
5	Amoxicillin	30 µgm / disc	--
6	Co-trimoxazole	25 µgm / disc	--
7	Tetracycline	30 µgm / disc	--
8	Erythromycin	15 µgm / disc	06
9	Cephalexin	30 µgm / disc	--
10	Azithromycin	15 µgm / disc	22
11	Phenoxymethyl penicillin	10 µgm / disc	31
12	Ampicillin	10 µgm / disc	--
13	Crude extract of leaves	500 µgm / disc	15
14	Methanol fraction of leaves	200 µgm / disc	18
15	DCM fraction of leaves	200 µgm / disc	20
16	Hexane fraction of leaves	200 µgm / disc	--
17	Negative control		--

The values indicate zone of inhibition in mm
'--' indicates no inhibition

quently in at least half of those affected by rheumatic fever with carditis.¹¹ It is fact, streptococcus is becoming more and more resistant to antibiotics¹², this research is designed to investigate and evaluate the novel anti-streptococcal properties of a medicinal plant *Momordica charantia* belonging to family Cucurbitaceae. This is very bioactive plant; many active compounds and their biological have been demonstrated.³⁻⁹ So we select the plant for finding different extracts and different fractions of *Momordica charantia* having promising anti-streptococcal activity.

The supplied strain of streptococcus was resistant to different conventional antibacterial agents as evidenced by disc diffusion technique which validates it as a multi-drugs resistant organism. The organism was highly sensitive to phenoxymethyl penicillin, an oral, cheap and easily available drug, used in the treatment of tonsillo-pharyngitis for long time which limits the validity of the research. However, the research work was specifically designed to observe the anti-streptococcal activity of the plant gave rationale for the study.

Hexane fraction usually contains highly non-polar compounds such as steroids. The hexane fraction of seeds and leaves did not produce inhibition which indicates that highly non-polar compounds of *Momordica charantia* are not active against streptococcus.

The DCM fraction usually extracts the medium polar compounds such as alkaloids, glycosides etc. Therefore, medium polar bioactive compounds of *Momordica charantia* inhibit the growth of the supplied organism. Further studies should be continued for exploring the bio-active compounds from DCM of leaves of *Momordica charantia*.

Acknowledgement

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Review article

Laboratory Diagnosis of Visceral Leishmaniasis: An Overview

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PURPOSE OF REVIEW

At present visceral leishmaniasis (VL) or Kala-azar is a re-emerging major public health problem in Bangladesh. Out of 64 districts of Bangladesh, the disease has been reported from 41 districts. The number of cases is increasing and reports from the district health authorities indicate that >15000 new cases can be expected annually. The current prevalence is estimated as 40,000 cases. The total population at risk is more than 20 million. Although kala-azar has been a notifiable disease in this country since 1987, reporting as well as diagnostic and curative capabilities of rural health services are still very limited. Early detection of the kala-azar cases and commencement of treatment is important for case recovery and disease control. The diagnosis of VL is complex because other commonly occurring diseases share its clinical features. Due to lack of instruments and facilities in areas of endemicity, any sophisticated method of laboratory diagnosis cannot be employed on a wider scale. So, there is a need for simple, rapid and accurate test with good sensitivity and specificity. Considering the facts, objective of this review is to recapitulate the conventional laboratory tests, simultaneously discuss about the modern laboratory methods for detection of VL.

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INTRODUCTION

The groups of diseases known as the leishmaniasis are caused by obligate intracellular protozoa of the genus *Leishmania*.¹ These are present in three different forms: visceral leishmaniasis (VL), cutaneous leishmaniasis and mucocutaneous leishmaniasis. The visceral form, also known as black sickness or kala-azar in Asia, is characterized by prolonged fever, splenomegaly, hepatomegaly, substantial weight loss, progressive anemia, pancytopenia and

hypergammaglobulinemia and is complicated by serious infections. Various terms have been used to describe VL, like Dum-dum fever, Sikari disease, Burdwan fever etc. However, the most commonly used term is Kala-azar, which means black sickness or black fever. The terms originally referred to Indian VL due to its characteristic symptoms, blackening or darkening of the skin of the hands, feet, face and the abdomen.²

VL is caused by the parasites *Leishmania donovani donovani*, *Leishmania donovani infantum* and *Leishmania donovani archibaldi* in the old world and by *Leishmania donovani chagasi* in the new world. In endemic cases of VL, the disease is chronic and

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onset is gradual. People of all ages are at risk except those who have conferred immunity due to a past infection.³

The geographical distribution of leishmaniasis is limited to the areas of natural distribution of the sandfly, the vector for the disease. The parasites are transmitted by the bite of infected female sand flies of the genera *Phlebotomus* and *Lutzomyia*. *Leishmania* infections are worldwide in distribution: they are found in all five continents. The disease is endemic in the tropical and subtropical regions of 88 countries. Leishmaniasis prevalence is estimated to be 12 million people and in developing countries, approximately 350 million people, mainly poor, are at risk of contacting with the disease.⁴ Kala-azar is nearly always fatal if untreated.⁵ Even with treatment, case-fatality rates often exceed 10% in VL-endemic areas of Asia and Africa.⁶ Of the estimated 59,000 deaths caused by leishmaniasis in 2001, 73% occurred in South Asia.⁷

After recovery, some patients (50% in Sudan and 1 to 3% in India) develop Post Kala-azar Dermal Leishmaniasis (PKDL), which requires prolonged and expensive treatment.^{8,9} PKDL patients also play an important role in VL transmission.¹⁰

The disease was in an explosive epidemic in Garo Hills and adjacent Brahmaputra valleys of Assam in 1880.¹¹ Before the Second World War, the disease was endemic in Assam, Bengal, Bihar and further South in the Eastern part of the Indian sub-continent.¹² Since then, in addition to endemic cases, waves of epidemic of the disease swept over the region every 15-20 years.¹³ Launching of malaria eradication programme of WHO between 1958-1964, VL from the various endemic areas of Indian sub-continent, including Bangladesh, was almost disappeared as a byproduct of widespread DDT spraying.^{12, 14}

Resurgence of the disease occurred during the late seventies following cessation of insecticide spraying for malaria control programme. During the last few years, increasing number of VL cases has been reported from various parts of Bangladesh.^{14, 15}

At present, the disease is a re-emerging major public health problem in our country. Highest prevalence of positive cases was seen in the districts of Mymensingh, followed by that of Tangail, Gazipur, Dhaka and Manikgonj.¹⁶

Now a day's laboratory diagnosis of kala-azar in our country is usually made on the basis of serological methods to detect antibodies in serum [by Direct Agglutination Test (DAT), Immunochromatographic Test (ICT), rK39, ELISA], to detect antigen in urine (by KAtex).¹⁷ Bone marrow and splenic aspirate staining and culture have been doing only in some specialized laboratory for parasite detection.¹⁸

Laboratory diagnosis of leishmaniasis

Laboratory diagnosis of leishmaniasis can be made by the following: (i) Demonstration of parasite in tissues of relevance by light microscopic examination of the stained specimen, *in vitro* culture, or animal inoculation; (ii) Detection of parasite DNA in tissue samples; or (iii) Immunodiagnosis by detection of parasite antigen in tissue, blood, or urine samples, by detection of nonspecific or specific antileishmanial antibodies (immunoglobulin) or by assay for leishmania-specific cell-mediated immunity.

Detection and isolation of parasite

Staining : The commonly used method for diagnosing VL has been the demonstration of parasites in splenic or bone marrow aspirate. The presence of the parasite in lymph nodes, liver biopsy or aspirate (bone marrow and spleen) specimens or the buffy coat of peripheral blood can also be demonstrated. Amastigotes appear as round or oval bodies measuring 2 to 5 μm in length and are found intracellularly in monocytes and macrophages. In preparations stained with Giemsa or Leishman stain, the cytoplasm appears pale blue, with a relatively large nucleus that stains red. In the same plane as the nucleus, but at a right angle to it, is a deep red or violet rod-like body called a kinetoplast.

After identification, parasite density can be scored microscopically by means of a logarithmic scale ranging from 0 (no parasite per 1,000 oil

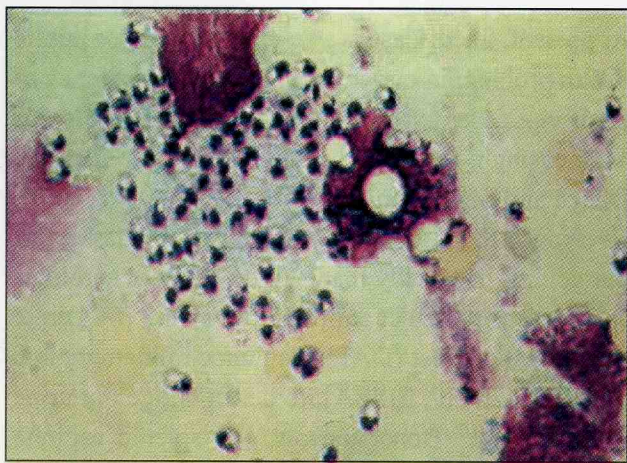


Figure:1-LD body within mononuclear cell (Splenic aspirate, Giemsa stain 10 x100)

immersion fields) to +6 (>100 parasites per field).¹⁸ The sensitivity of the bone marrow smear is about 60 to 85%. Splenic aspirate, though associated with risk of fatal hemorrhage in inexperienced hands, is one of the most valuable methods for diagnosis of Kala-azar, with a sensitivity exceeding 95%. Splenic aspiration is generally preferable over more painful bone marrow aspiration, and has proven to be safe and relatively easy to perform in experienced hands. For patients suspected to have VL, splenic aspirate can be performed even when spleen is not palpable, after demarcating the area of splenic dullness by percussion. The only risk of splenic puncture is bleeding from a soft and enlarged spleen. To avoid the risk of excessive blood loss, splenic puncture should be avoided in patients with a platelet count of less than 40,000 platelets/ μ l and a prothrombin time of more than 5 seconds over the control.¹⁸

A tissue specimen, e.g., a spleen, liver, or lymph node tissue specimen, may be subjected to imprint cytology by the repeated pressing of its cut flat surface on microscopic slides. The smear is fixed with absolute alcohol and stained with Giemsa stain. In imprint cytology, a monolayer of cells is formed and amastigotes are easily identifiable. Tissue specimens can also be subjected to histology, and the presence of parasites can be demonstrated by standard hematoxylin and eosin stain. Tissue

specimens are usually uneven in thickness; consequently the amastigotes are unevenly distributed. Long searches may be required to demonstrate the parasite. The sensitivity of the test can be increased by staining the specimen with fluorescent dye-tagged antibodies to the surface receptors of the parasite. Fluorescein isothiocyanate isomer or rhodamide B isothiocyanate-conjugated antiserum is usually used for this purpose. Fluorescent dye-conjugated monoclonal antibodies are also used for speciation of the parasite.¹⁹

CULTURE

Culture of parasite can improve the sensitivity of detection of parasite, but leishmania culture is rarely needed in routine clinical practice. However, cultures are required for (i) obtaining a sufficient number of organisms to use an antigen for immunologic diagnosis and speciation, (ii) obtaining parasites to be used in inoculating susceptible experimental animals, (iii) *in vitro* screening of drugs, and (iv) accurate diagnosis of the infection with the organism (as a supplement to other methods or to provide a diagnosis when routine methods have failed). Leishmania strains can be maintained as promastigotes in artificial culture medium. The culture media used may be monophasic (Schneider's insect medium, M199, or Grace's medium) or diphasic (Novy-McNeal Nicolle medium and Tobies medium). Culture tubes are inoculated with 1 to 2 drops of bone marrow or splenic aspirate and incubated at a temperature between 22 and 28°C. The tubes are examined weekly for the presence of promastigotes by phase-contrast microscopy or by wet mount of culture fluid for 4 weeks before being discarded as negative. If promastigotes are present, they are maintained by weekly passage to fresh medium. Blood can also be used to isolate the parasite, but the method is slow and takes longer time. Aseptically collected blood (1 to 2 ml) is diluted with 10 ml of citrated saline and the cellular deposit obtained after centrifugation is inoculated in culture media. Contamination of the culture media by bacteria or yeast species or other fungi usually complicates the

culture but can be avoided by use of good sterile techniques and by the addition of penicillin (200 IU/ml) and streptomycin (200 µg/ml) to the medium (for bacteria), as well as 5-flucytosine (500 µg/ml) (as an antimycotic agent).¹⁹

Although demonstration of even a single amastigote upon microscopic examination of stained tissue aspirate smears or multiple promastigotes in cultures is considered sufficient for positive diagnosis of the disease. The procedure for obtaining tissue specimen is traumatic and associated with considerable risk. Identification of amastigotes requires considerable expertise and training and is subject to the ability of the observer. Besides, culturing parasites is expensive and time consuming and requires expertise and costly equipment, severely restricting its use in routine clinical practice.²⁰

DNA detection method

Due to the limitations inherent in techniques used for detection of parasites, new approaches to the detection of parasites, such as DNA hybridization, have been attempted since the early 1980s. Although these methods had considerable sensitivity (detecting as few as 50 to 100 parasites)²¹, their potential use in routine diagnosis is hampered by the complex procedure of hybridization. Morphological identification of the LD body from stained clinical specimen may sometimes be difficult. In those circumstances, the development of PCR has provided a powerful approach to the application of molecular biology techniques to the diagnosis of leishmaniasis. Primers designed to amplify conserved sequences found in minicircles of kDNA (Kinetoplast DNA) of leishmanias of different species were tested in various tissues of relevance. Such a target was eminently suitable because the kinetoplast is known to possess thousands of copies of minicircle DNA. In recent years, PCR-based diagnostic methods with a wide range of sensitivities and specificities have been described^{22, 23, 24 & 25}. PCR assay with buffy coat preparations to detect *Leishmania* was 10 times more sensitive than that with whole-blood prepara-

tions.²⁶ It is a sensitive and specific tool for diagnosis of both VL and PKDL and a useful method for species identification²⁷, PCR can also be used to distinguish between relapse and reinfection in treated VL patients.

Immunodiagnosis

(i) Antigen detection Antigen detection is more specific than antibody-based immunodiagnostic tests. This method is also useful in the diagnosis of disease in cases where there is deficient antibody production (as in AIDS patients). De Colmenares et al. from Spain have reported two polypeptide fractions of 72-75 kDa and 123 kDa in the urine of kala-azar patients. The sensitivities of the 72-75-kDa fractions were 96%, and the specificities were 100%. Besides, these antigens were not detectable within 3 weeks of anti-Kala-azar treatment, suggesting that the test has a very good prognostic value.²⁸

A new latex agglutination test (KAtex) for detecting leishmanial antigen in urine of patients with VL has showed sensitivities between 68 and 100% and a specificity of 100% in preliminary trials. The antigen is detected quite early during the infection and the results of animal experiments suggest that the amount of detectable antigen tends to decline rapidly following chemotherapy. The test performed better than any of the serological tests when compared to microscopy. Large field trials are under way to evaluate its utility for the diagnosis and prognosis of VL.²⁹

(ii) Antibody detection Some of the tests used for detecting these nonspecific immunoglobulins are Napier's formol gel or aldehyde test and the Chopra antimony test. Since these tests depend upon raised globulin levels, results can be positive in a host for many other conditions.^{30, 31} Lack of specificity, as well as varying sensitivities, renders them highly unreliable.

Several immunodiagnostic methods which are more sensitive and specific have been developed. They are useful in identifying specific cases and can be used for community surveillance. Conventional

culture but can be avoided by use of good sterile techniques and by the addition of penicillin (200 IU/ml) and streptomycin (200 µg/ml) to the medium (for bacteria), as well as 5-flucytosine (500 µg/ml) (as an antimycotic agent).¹⁹

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methods for antibody detection included gel diffusion, complement fixation test, indirect hemagglutination test, indirect fluorescence antibody test (IFA test), and countercurrent immunoelectrophoresis.^{32, 33} However, aside from practical difficulties at peripheral laboratories, the sensitivities and specificities of most of the above tests have been the limiting factors. Except for the IFA test, which is used on a limited scale, these tests are rarely used for routine diagnosis of VL. In 1988, a modified DAT was reported to be useful in kala-azar and is being used in several countries of endemicity including Bangladesh.³⁴ DAT in various studies has shown to be 91 to 100% sensitive and 72 to 100% specific.^{35, 36} Although DAT showed a high degree of repeatability within the centers, its reproducibility across the centers was quite weak.³⁷ Moreover, difficult field conditions, the fragility of aqueous antigen, the lack of cold chain, and batch-to-batch variations in the antigen, along with the nonstandardization of test readings, have severely limited its widespread applicability in regions of endemicity. DAT may yield positive results for a long time after complete cure and thus has not proved to be of much prognostic value.³⁴

ELISA has been used as a potential serodiagnostic tool for almost all infectious diseases, including leishmaniasis. The technique is highly sensitive, but its specificity depends upon the antigen used. Several antigens have been tried. A recombinant antigen, rK39, has been shown to be specific for antibodies in patients with VL caused by members of the *L. donovani* complex.^{38, 39} This antigen, which is conserved in the kinesin region, is highly sensitive and predictive of the onset of acute disease. High antibody titers in immunocompetent patients with VL have been demonstrated. This antigen has been reported to be 100% sensitive and 100% specific in the diagnosis of VL and PKDL by ELISA.^{40, 41} Another important facet of anti-rK39 antibody is that the titer correlates directly with the disease activity, indicating its potential for use in predicting response to chemotherapy.

Because of the conditions prevailing in areas of endemicity, any sophisticated method cannot be employed on a wider scale. There is a need for a simple rapid and accurate test with good sensitivity and specificity, which can be used without any specific expertise. A promising ready-to-use immunochromatographic strip test based on rK39 antigen has been developed as a rapid test for use in difficult field conditions. The recombinant antigen is immobilized on a small rectangular piece of nitrocellulose membrane in a band form and goat anti-protein A is attached to the membrane above the antigen band. After the finger is pricked, half a drop of blood is smeared at the tip of the strip, and the lower end of the strip is allowed to soak in 4 to 5 drops of phosphate-buffered saline, placed on a clean glass slide or tube. If the antibody is present, it will react with the conjugate (protein A colloidal gold) that is pre-dried on the assay strip. The mixture moves along the strip by capillary action and reacts with rK39 antigen on the strip, yielding a pink band. In the strip of patients who are infected, two pinkish lines appear in the middle of the nitrocellulose membrane (the upper pinkish band serves as a procedural control). The rK39 immunochromatographic strip test has proved to be versatile in predicting acute infection, and it is the only available format for diagnosis of VL with acceptable sensitivity and specificity levels which is also inexpensive and simple and can be performed even by paramedics in prevailing difficult field conditions.

Specific antibodies can also be detected by Western blotting. The sensitivity of this technique can be enhanced using the chemiluminescent antibody probes. Using Western blotting, one can find even minor antigenic differences among various organisms and thus detect cross-reactive antigens. However, the process is time consuming, technically cumbersome, and expensive.⁴²

Skin testing

Delayed type hypersensitivity (DTH) or T-cell-mediated immunity is a group-specific immune

response. The Montenegro skin test (leishmanin skin test) is a test for DTH specific to leishmaniasis, but its role is limited in diagnosis.^{33, 43}

CONCLUSION

Microscopy is still the best method for diagnosis of VL and PKDL. Various noninvasive tests, with various specificities and sensitivities, are also now available for the diagnosis of leishmaniasis. Few of them have potential to become popular in areas of endemicity. Among the serological tests antigen detection in urine has proved to be the best with the disadvantage that it has no value in diagnosis of PKDL. DAT can be performed only in a few centralized laboratories that are equipped for the purpose, but lack of commercial kit and standardization is an important draw back. The rK39 strip test (ICT) has the potential to be used for diagnosis of VL under field conditions. Though expensive and require sophisticated instrument and expertise, PCR is a useful, highly sensitive and specific diagnostic tool for VL and PKDL. In conclusion, it will not be unsure to say that a combination of urinary antigen (KAtex) and K39 antibody (ICT) detection will give the highest sensitivity and specificity among noninvasive methods.

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Case Report

Acrodermatitis Enteropathica: A Rare Metabolic Disorder

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ABSTRACT

Acrodermatitis enteropathica is an autosomal recessive disorder characterized by periorificial and acral dermatitis, alopecia and diarrhea. Danbolt and Class first described the condition in 1942. Recently a boy was admitted in paediatrics ward of Jalalabad Ragib-Rabeya Medical College Hospital and diagnosed as a case of acrodermatitis enteropathica. Rarity of this disease has led us to report the case.

[Jalalabad Medical Journal 2006; 3(1) : 40-2]

INTRODUCTION

Acrodermatitis enteropathica (AE) is an inborn error of metabolism of zinc. In infants with AE, an absence of a binding ligand may contribute to zinc malabsorption during weaning.¹ Such a ligand has been identified in normal pancreatic secretions as well as in human milk.^{2, 3}

Grider and Mouat described differences between two novel proteins in the fibroblasts carrying the AE mutations⁴ and Wang has recently mapped the AE genetic locus to band 8q24.3⁵ The diagnosis of AE is established by the constellation of clinical findings and detection of a low plasma zinc concentration. AE can only be accurately diagnosed after attempts to omit zinc supplementation have failed.⁶ Therefore, patients with AE must remain on zinc supplementation for life. Such therapy achieves a survival rate of

100%. Untreated patients usually die within the first few years of life. AE has no sexual or racial predilection and symptoms manifest when an infant is weaned from breast feeding or earlier if infant is formula fed.

CASE REPORT

A boy of 6 years was admitted in pediatrics ward of Jalalabad Ragib-Rabeya Medical College Hospital, Sylhet with the complaints of eczematous, dry, scaly skin lesions for 1 year. Skin lesions were more predominant in face, genital region, hands and feet. His parents had history of consanguineous marriage. He also had history of repeated attacks of watery diarrhea for last 5 years. The boy also complained that swelling has been developed in his legs for 8 months. His elder brother had suffered from similar types of illness for 3 years and died. On examination, he was found depressed, irritable, anemic, edematous and with severe growth retardation. His well-demarcated, scaly skin lesions were mainly

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distributed in periorificial and acral regions (Fig-1). There was pedal edema and his hair was sparse and brown in colour. Investigation revealed a low serum zinc level ($6 \mu\text{mol/L}$) with hypoalbuminaemia. His liver and renal function was normal. He was treated with zinc supplementation, antibiotics and balanced diet, within two weeks his edema subsided, skin lesions began to disappear and loose motion came under control. He gradually regained his appetite and weight and his hair also turned into black.



Fig-1 : Photograph shows scaly demarcated skin lesions

DISCUSSION

Zinc is essential constituent of many enzymes such as carbonic anhydrase, alkaline phosphatase, pancreatic carboxypeptidase and superoxide dismutase. It is involved in the synthesis and stabilization of proteins, DNA, RNA and plays a structural role in ribosomes and membranes. Zinc is necessary for the binding of steroid hormone receptors and several other transcription factors to DNA and thereby plays an important role in regulation of gene transcription. Zinc is absolutely required for normal spermatogenesis, fetal growth and embryonic development.⁷ Zinc deficiency from AE causes cutaneous eruption consisting of vesiculobullous or eczematous, dry scaly or psoriasisiform skin lesion symmetrically distributed in the perioral, acral and perineal areas and on the cheeks, knees and elbows.⁸ Skin lesions have sharply demarcated border. Paronychia may be present. Alopecia may be evident. Wells and Winkelman have described the presence of these symptoms in a series of 58 cases. They found that 91% of patients studied had diarrhea, 98% had

alopecia, 96% had nail dystrophy and 100% had dermatitis.⁹ Chronic zinc deficiency from AE causes stunted growth, decreased taste sensation (Hypogusia), impaired immune function and night blindness due to impaired conversion of retinol to retinaldehyde. This condition is described as a cause of hypogonadism, poor wound healing and dwarfism. Infants may also experience withdrawal, photophobia and loss of appetite.⁷

Histologic examination reveals parakeratosis of the stratum corneum with occasional neutrophils and intracellular edema. Granular cell layer is diminished. Focal dyskeratosis is seen. Sometimes subcorneal pustules are seen. Intestinal mucosal biopsies show loss of villous architecture in the lamina propria of the patients of AE. The nuclei are enlarged with an open chromatin distribution complete normalization of the intestinal mucosa is observed in the mucosal biopsy after zinc supplementation.⁶

Lab studies show decreased serum zinc level ($<12 \mu\text{mol/L}$ or $<70 \mu\text{g/dL}$).⁷ Serum alkaline phosphatase is also diminished later in the course of the disease.⁶ Most of the zinc accretion in a fetus occurs during the third trimester. Therefore, in premature infants, a lack of stored zinc may precipitate symptoms very early, especially if they are fed with formula.

Treatment of AE requires administration of zinc gluconate or sulphate orally at 1-3 mg/kg/day. Although the intravenous dose has not been established, amounts of 300-1000 $\mu\text{g/kg/day}$ may be sufficient for rapid reversal of symptoms. Clinical response is observed within 5-10 days. This zinc therapy has to be maintained throughout the patient's life-span. Exacerbation during pregnancy or stress of disease may require an increase in the therapy. Warm compresses and vaseline to areas of weeping of crusting dermatitis may enhance reepithelialization when used concurrently with zinc supplement.¹⁰ No special diet is necessary as long as zinc supplementation is continued. Skin lesions in AE are commonly infected with *S. aureus* or *C. albicans* which require appropriate antibiotic coverage.⁷

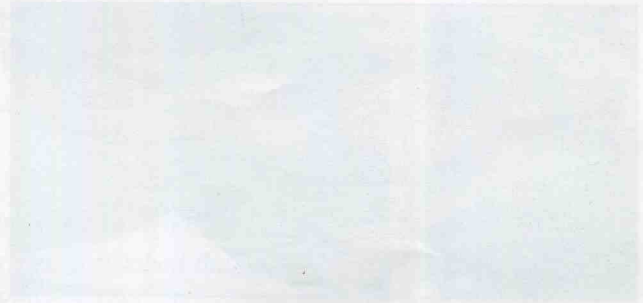
Some other clinical conditions have to be excluded which may mimic the presentation of AE such as kwashiorkor, acquired zinc deficiency due to any cause, atopic dermatitis, essential fatty acid deficiency, seborrheic dermatitis etc.⁸ In infants and children outpatients follow-up care is essential to ensure growth and development. Untreated children usually die of severe PEM or superinfection.

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Miscellaneous

The XIIIth World Congress of Psychiatry: A Brief Report on Cairo Summit

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The XIIIth World Congress of psychiatry held in Cairo, Egypt on Sept 10-15th, 2005. It was a pleasure for me to join the world congress as a member of Psychiatric Association of Bangladesh. The Egyptian Psychiatric Association was honored to host the 13th world congress, under the patronage of His Excellency of Hosny Mubarak, Honorable President of Egypt. The congress was held for the first time in the African Continent, a land of 5000 years of civilization. The theme of the congress was '5000 years of science and care, building the future of psychiatry.' It reflected both the admixture of old and the new and progress into the future. The purpose of the theme was to attempt to translate science and technology to care and clinical practices.

Mental disorders were known to ancient Egypt 5000 years ago. It is the location of the one of the world's great civilization. From Egypt came the first calendar, the earliest script, the oldest known love-song, the first decorated monumental building and the tallest tomb. And it has the oldest university of the world (The Islamic Al-Azhar University). Five places from various times known as world heritage sites: Memphis, capital of old kingdom, modern city Luxor with its temple and tombs, Nubian temples from Abu Simbel to Philae, the early Christian pilgrimage centre of Abu Mina and the ancient Islamic quarter of Cairo. Cairo offered the most significant collection of Pharaonic, Coptic and Islamic art. The splendid of Egypt includes the beautiful seaport city of Alexandria, the azure water of Hurghada and Sharm El-Sheikh, unique experience of cruising along the Nile between Luxor and Aswan, etc. made the history of civilization of 6000 years most memorable.

Conference venue was Cairo International Convention and Exhibition Centre (CICEC), an eminent centre conveniently located in a quiet district, a mere 10 minute from Cairo International Airport. A grand opening ceremony on 10.09.05 in room 'Cheops' with immense decoration started at 7 PM (local time) with welcome address by Dr Ahmad Okasa, President of the World Psychiatric Congress (Egypt), followed by the national anthem, short film about 'Egypt', speech from the Honorable Minister of Tourism of Egypt and the President of Psychiatric Association of Egypt. There was a charming lecture on 'Mental Disorder and Care in Egyptian history: from pharaonic to islamic eras' by Prof Ahmad Okasha chaired by Juan Jose Lopez-Ibor from Spain and Junan E Mezzich from USA. In this session, one of the exciting events was distribution of award for (i) Jean Dely prize (ii) Okasha award for developing countries and (iii) Geneva prize for human rights.

Scientific session started from 10th September and continued up to 15th. The congress discussed the state of art in the recent advances in neuroscience as regards all the complexities of today in psychiatry. The four plenary lectures were presented by the president of the World Psychiatry Association (WPA), by incoming president of WPA, Professor Ahmad Zewali (Nobel laureate of physics) and the winner of Jean Dely prize 2005. Key lectures with special addresses of 45 minutes each by distinguished experts and special symposia organized by the WPA executive committee covering WPA institutional activities and program were the

attracting session of this congress.

55 scientific sections presented their activities with special, regular and industry supported symposia, workshops, seminar, forum, debate and posters. There were 16 forums on critical issue in psychiatry organized by experts invited by scientific committee. Video teleconferences, new books and journal presentation, new research paper sessions and free oral communication session were also presented. It was for the first time in a world congress where master clinical cases were discussed with worldwide pioneers in clinical psychiatry and there was a lot of active participation of the audience.

English was the main language used and recommended in every session of the congress and also simultaneous translation into Spanish and French were provided during plenary lectures, opening and closing ceremony.

Various newly growing and interesting section and topic have drawn the attention of the participants. The most important subjects discussed were regarding 'psycho-oncology', 'public policy and psychiatry', 'military and disaster psychiatry', 'art and psychiatry', 'psychiatry, law and ethics', 'neuroimmunological development in psychological disorders', 'spirituality, religion and psychiatry', 'women's mental health', 'professional challenges and opportunities for the young psychiatrist', 'recent development in culturally appropriate mental health' etc. A paper on 'Current Psychiatric Status in Bangladesh'- was presented on behalf of Bangladesh Psychiatric Association in 13th, Sept by Prof. Wahazi Alam Chowdhury.

The paper selected as posters were grouped by topics and exhibited in the poster and was open to all participants from 11-14th September 2005. There was a provision for short discussion of the poster with the presenting authors. About 1300 posters were displayed.

In the social events, following opening ceremony, a charming welcome reception was given to all participants and guests at the Chinese Garden of the congress venue. On 13th, there was also exclusive dinner at the Pyramid Plates where guests were received by drummers, musicians and horse dancers dressed in Bedouin attire and later guests were invited in to the tent to witness the most amazing panoramic view of the three Pyramids and entertained with dinner there. In the closing ceremony, held at the auditorium at 11.30h, expressed with welcome vote of thanks, video-clip highlighted the congress activities, presenting the newly elected WPA officers, honoring congress organizer and invitation to XIV WCP in Prague, were the main events.

In sum, I like to express my enthusiastic feeling and pleasure for attending the congress where about more than 5000 psychiatrists and scientists met together, exchanged views and knowledge. It was an excellent scientific tour to upgrade knowledge and skills and development of contemporary insights. The tour was fascinated with beauty of the historically rich country, cultural flavor and the warm hospitality. A visit to Egyptian museum (where 'Mummy' are preserved), Pharaonic villages, Sakkara and seaport of Alexandria had made the tour memorial forever.



Instructions for Author(s)

Manuscripts on clinical, review, experimental and historical topics pertinent to medical sciences are accepted for the publication in this journal. The papers are accepted for the publication with an understanding that they are solely submitted for this journal. The statements, comments or opinions expressed in the papers are exclusively of author(s), not of editor(s) or publisher. The manuscripts are to be prepared as described in following instructions. 3 (three) hard copies are to be submitted. Letters about potentially acceptable manuscripts will be sent after review process is complete. No manuscripts will be returned if not accepted for publication. In addition an electronic/digital version of the manuscript composed in MS word 98/2000 should be submitted in a diskette.

Preparation of manuscripts

Manuscripts should be typewritten, double-spaced throughout (including references and tables) on one side of good quality A4 sized paper, with margins of at least 25 mm. Each component of the manuscript should begin on a new page in the sequence of title or cover page, abstract with key words, text, acknowledgement, references, tables and legends for illustrations.

Title page will contain

- Concise and informative title of the article
- Author(s) name, highest academic degree(s).
- Name of the department(s) and institution(s).
- Address for correspondence and reprint (please include e-mail address and fax if available)

Abstract and key words

An informative abstract not more than 250 word should briefly describe the objectives, materials and methods, results and conclusion. Number of key words should not more than ten and none that are in

the title.

Text should contain Introduction, Materials and Methods, Results and Discussion in sequence.

Introduction

It should briefly disclose the purpose of study. It will help the readers with the problem finding. It should be clear in nature and purpose.

Materials and Methods

Clearly it should include materials, experimental procedures, methods etc. Mention the nomenclature, source of material, equipment with manufacturers details in parentheses. Describe new methods in sufficient detail indicating their limitation. Established methods should be cited with authentic references. Ethical standards should be followed in reporting experiments done in human subjects. Precisely identify the dosage and route of administration, when drugs or chemicals are used. Measurements and data should be stated in SI unit, or if SI unit does not exist, use an internationally accepted unit. Abbreviations and acronyms should be used for widely used terms and names, which occurs consistently and frequently in the manuscript.

Results

It should be presented in logical sequence in text, tables or illustrations. Duplications of data in the tables or illustrations should be avoided. Emphasize or summarize only important observations.

Discussion

Emphasize the new and important aspects of the study and conclusion derived from them. Detail data written in introduction and other portions of text should not be repeated. The implication of results and their limitations including suggestion for future research should be included in the discussion.

References

Number the references consecutively in order mentioned in the text. Full list of reference should include all authors. Avoid using abstracts as references. References to paper accepted but not yet published should be designated as 'in press' or 'forthcoming'. Authors should obtain written permission to cite such papers as well as verification that they have been accepted for publication. Information from manuscripts submitted but not accepted should be cited as 'unpublished observations' with written permission from the source. Use the styles of example below, which are based on the formats used by US National Library of Medicine (NLM) in the *Index Medicus*. The title of journals should be abbreviated according to the style used in *Index Medicus*.

Article in journal

a) List all six authors when six or less

Vega KJ, Pina I, Krevsky B. Heart transplantation in associated with an increased risk for pancreatobiliary disease. *Ann Intern Med* 1996; 124 (11): 980-3.

As an option, if a journal carries continuous pagination throughout a volume (as many journals do) the month and issue number may be omitted.

b) More than six authors

Parkin DM, Clayton D, Black RJ, Masuyer E, Friedl HP, Ivanov E, et al. Childhood leukaemia in Europe after chernobyl: 5 year follow-up. *Br J Cancer* 1996; 73:1006-12.

c) No author given

Cancer in South Africa (editorial). *S Afr Med J* 1948; 84:15

d) Organization as author

The cardiac society of Australia and New Zealand. Clinical exercise stress testing. Safety and performance guidelines. *Med J Aust* 1990; 146: 267-9.

Books and monographs

a) Personal author(s)

Laurence DR, Bennett PN, Brown MJ. *Clinical Pharmacology*. 8th ed. New York: Churchill Livingstone; 1997.

b) Editor(s), compiler(s) as author

Norman IJ, Redfern SJ, editors. *Mental health care for elderly people*. 5th ed. New York: Churchill Livingstone; 1999.

c) Organization as author and publisher

World Health Organization. *Ethical criteria for medical drug promotion*. Geneva: World Health Organization; 1988.

d) Chapter in a book

Phillips SJ, Whisnant JP. Hypertension and stroke. In: Laragh JH, Brenner BM, editors. *Hypertension: pathophysiology, diagnosis and management*. 2nd ed. New York: Raven Press; 1995. p 465-9.

e) Dissertation or thesis

Kaplan SJ. *Post hospital home health care: the elderly access and utilization (dissertation)*. St. Louis (MO): Washington Uni; 1995.

Other published material

a) Newspaper article

Lee G. Hospitalization tied to ozone pollution: study estimates 50,000 admissions annually. *The Washington post* 1996; June 21; sect. A: 3 (col. 5).

b) Dictionary and similar references

Student's medical dictionary. 26th ed. Baltimore: Williams and Wilkins; 1995. Apraxia; p.119-20.

Unpublished material

a. In press

Leshner AI. Molecular mechanisms of cocaine addiction. *N Eng J Med* (in press) 1997.

Electronic material

a) Journal articles in electronic format

Morse SS. Factors in the emergence of infectious diseases. *Emerg Infect Dis* [serial online] 1995 Jan-Mar [cited 1996 June 5]; 1(1): [24 screens]. Available from: URL: <http://www.cdc.gov/ncidod/EID/eid.htm>

b) Monograph in electronic format

CDI, clinical dermatology illustrated [monograph on CD-ROM]. Reeves JRT, Maibach H. CMEA Multimedia group, producers. 2nd ed. Version 2.0. San Diego: CAEA; 1995.

C) Computer files

Haemodynamics III: The ups and downs of haemodynamics [computer program]. Version 2.2. Orlando (FL): Computerized Educational Systems; 1993.

Table(s)

Each table should be typed on a separate sheet, brief title for each and should be numbered consecutively using Roman numbers and be cited in the consecutive order. Internal horizontal and vertical lines should not be used.

Illustration(s)

(Figure(s), photograph(s) etc.)

Figure(s) should be clear and legible. Illustration will be modified or recreated to conform to journal style. Photographs and photomicrographs should be clear and large enough to remain legible after the figure has been reduced to fit the width of a single column. The back of each figure should include the sequence number and the proper orientation (e.g.top). All illustrations should be referred to as figures numbered consecutively in the text in Arabic numerical.

Acknowledgement should appear at the end of the manuscripts before references.

Review and action

Manuscripts are usually examined by the editorial staff and are sent to outside reviewers. Author's suggestion regarding the names of possible reviewers is encouraged, but editorial board reserves the right of final selection.

Submission

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