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GREEN LIFE MEDICAL COLLEGE JOURNAL

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AIMS & SCOPE:

The Green Life Medical College Journal is an english language scientific papers dealing with clinical medicine, basic sciences, epidemiology, diagnostic, therapeutics, public helath and healthcare in relation to concerned specialities. It is an official journal of Green Life Medical College and is published bi-annually.

This Joural is recognized by Bangladesh Medical & Dental Council (BM&DC).

The Green Life Medical College Journal of Bangladesh intends to publish the highest quality material on all aspects of medical science. It includes articles related to original research findings, technical evaluations and reviews. In addition, it provides readers opinion regarding the articles published in the journal.

INSTRUCTION TO AUTHORS:

Papers:

The Green Life Medical College Journal (published bi-annually) accepts contributions from all branches of medical science which include original articles, review articles, case reports, and letter to the Editor.

The articles submitted are accepted on the condition that they must not have been published in whole or in part in any other journal and are subject to editorial revision. The editor preserves the right to make literary or other alterations which do not affect the substance of the contribution. It is a condition of acceptance that the copyright becomes vested in the journal and permission to republish must be obtained from the publisher. Authors must conform to the uniform requirements for manuscripts submitted to biomedical journals (JAMA 1997; 277: 927-34).

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In preparing the manuscript, use double spacing throughout, including title, abstract, text, acknowledgement, references, table and legends for illustrations and font type and size 'Times New Roman 12'. Begin each of the following sections on a separate paper. Number pages consecutively.

The standard layout of a manuscript:

- Title page
- Abstract, including Keywords
- Introduction
- Methods
- Results
- Discussion
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The pages should be numbered in the bottom right-hand corner and the title page being page one, etc. Start each section on a separate page.

Title page:

A separate page which includes the title of the paper. Titles should be as short and concise as possible (containing not more than 50 characters). Titles should provide a

reasonable indication of the contents of the paper. This is important as some search engines use the title for searches. Titles in the form of a question, such as 'Is drinking frequent coffee a cause of pancreatic carcinoma?" may be acceptable.

The title page should include the name(s) and address(es) of all author(s). Details of the authors' qualifications and post (e.g., professor, consultant) are also required. An author's present address, if it differs from that at which the work was carried out, or special instructions concerning the address for correspondence, should be given as a footnote on the title page and referenced at the appropriate place in the author list by superscript numbers ([1, 2, 3] etc.) If the address to which proofs should be sent is not that of the first author, clear instructions should be given in a covering note, not on the title page.

Abstract:

The 'Abstract' will be printed at the beginning of the paper. It should be on a separate sheet, in structured format (Introduction/Background; Methods; Results; and Conclusions) for all Clinical Investigations and Laboratory Investigations. For Reviews and Case Reports, the abstract should not be structured. The Abstract should give a succinct account of the study or contents within 350 words. The results section should contain data. It is important that the results and conclusion given in the 'Abstract' are the same as in the whole article. References are not included in this section.

Keywords:

Three to six keywords should be included on the summary page under the heading Keywords. They should appear in alphabetical order and must be written in United Kingdom English spelling.

Introduction:

The recommended structures for this section are:

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- What is known/unknown about it
- What research question / hypothesis you are interested in
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The introduction to a paper should not require more than about 300 words and have a maximum of 1.5 pages double-spaced. The introduction should give a concise account of the background of the problem and the object of the investigation. It should state what is known of the problem to be studied at the time the study was started. Previous work should be quoted here but only if it has direct bearing on the present problem. The final paragraph should clearly state the primary and, if applicable, secondary aims of the study.

Methods:

The title of this section should be 'Methods' - neither 'Materials and methods' nor Patients and methods'. The Methods section should give a clear but concise description of the process of the study. Subjects covered in this section should include:

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Ethical clearance:

Regardless of the country of origin, all clinical investigators describing human research must abide by the Ethical Principles for Medical Research Involving Human Subjects outlined in the Declaration of Helsinki, and adopted in October 2000 by the World Medical Association. This document can be found at: http://ohsr.od.nih.gov/guidelines/helsinki.html. Investigators are encouraged to read and follow the Declaration of Helsinki. Clinical studies that do not meet the Declaration of Helsinki criteria will be denied peer review. If any published research is subsequently found to be non-compliant to Declaration of Helsinki, it will be withdrawn or retracted. On the basis of the Declaration of Helsinki, the Green Life Medical Journal requires that all manuscripts reporting clinical research state in the first paragraph of the 'Methods' section that:

- The study was approved by the appropriate Ethical Authority or Committee.
- Written informed consent was obtained from all subjects, a legal surrogate, or the parents or legal guardians for minor subjects.

Human subjects should not be identifiable. Do not disclose patients' names, initials, hospital numbers, dates of birth or other protected healthcare information. If photographs of persons are to be used, either take permission from the person concerned or make the picture unidentifiable. Each figure should have a label pasted on its back indicating name of the author at the top of the figure. Keep copies of ethics approval and written informed consents. In unusual

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The methods must be described in sufficient detail to allow the investigation to be interpreted, and repeated if necessary, by the reader. Previously documented standard methods need not be stated in detail, but appropriate reference to the original should be cited. However, any modification of previously published methods should be described and reference given. Where the programme of research is complex such as might occur in a neurological study in animals, it may be preferable to provide a table or figure to illustrate the plan of the experiment, thus avoiding a lengthy explanation. In longitudinal studies (case-control and cohort) exposure and outcome should be defined in measurable terms. Any variables, used in the study, which do not have universal definition should be operationalised (described in such terms so that it lends itself to uniform measurement). Where measurements are made, an indication of the error of the method in the hands of the author should be given. The name of the manufacturer of instruments used for measurement should be given with an appropriate catalogue number or instrument identification (e.g. Keyence VHX-6000 digital microscope). The manufacturer's town and country must be provided, in the case of solutions for laboratory use, the methods of preparation and precise concentration should be stated.

Single case reports:
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In the case of animal studies, it is the responsibility of the author to satisfy the board that no unnecessary suffering has been inflicted on the animal concerned. Therefore, studies that involve the use of animals must clearly indicate that ethical approval was obtained and state the Home Office License number or local equivalent.

Drugs:
When a drug is first mentioned, it should be given by the international non-proprietary name, followed by the chemical formula in parentheses if the structure is not-well known, and, if relevant, by the proprietary name with an initial capital letter. Dose and duration of the drug should be mentioned in sufficient details. If the drug is already in use (licensed by appropriate licensing authority), generic name of the drugs should preferably be used followed by proprietary name in brackets.

Present the result in sequence in the text, table and figures. Do not repeat all the data in the tables and/or figures in the text. Summarize the salient points. Mention the statistics used for statistical analysis as footnote under the tables or figures. Figures should be professionally drawn. Illustration can be photographed (Black and White glossy prints) and numbered.

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Do not repeat the data in detail, already given in the results. Give implications of the findings, their strengths and limitations in comparison to other relevant studies. Avoid un-qualified statements and conclusions which are not supported by the data. Avoid claiming priority.

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Examples of correct forms of references:
Dorababu M, Prabha T, Priyambada S, Agrawal VK, Aryaa NC, Goel RK. Effect of Azadirachta indica on gastric ulceration and healing of bacopa monnierang in experimental NIDDM rats. *Indian J Exp. Biol 2004; 42: 389-397.*

Chapter in a book:
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All manuscripts for publication should be addressed to the executive editor.

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Any reader can provide feedback regarding published articles by writing letter to editor. The reader can also share any opinion in relation to medical science.

Prof. Dr. A.B.M. Bayezid Hossain
Editor-in-chief
Green Life Medical College Journal and
Principal
Green Life Medical College

ABOUT THE COLLEGE

INTRODUCTION

In 2005, about fifty distinguished physicians of the country started a hospital to give specialized care in the private sector. They named it Green Life Hospital and it turned out to be a great success. So in 2009, they decided to establish a medical college which will be a non-government, non-profit, self-financing project and will serve the humanity.

This College came into existence in 2009. The college commences its activities with the enrollment of 51 students in the 1st batch in 2010. Since inception, the college has undergone tremendous development and became a splendid centre for learning and development. At present we are enrolling 120 students each year. Among them, numbers of seats are reserved for overseas students.

We continue to evaluate and improve our programme to ensure the best medical education for the students. Our educational strategy is to create a conducive learning environment and to steer our students to acquire adequate knowledge, skills and temperament to practice medicine and be a competent health care professional group.

Green Life Medical College (GLMC) is approved by the Ministry of Health and Family Welfare (MOHFW), Government of Bangladesh and Bangladesh Medical and Dental Council (BM&DC) and affiliated to the University of Dhaka.

AIMS AND OBJECTIVES OF THE COLLEGE

Aims:

To create a diverse and vibrant graduate scholars in medical discipline and to create highly competent and committed physicians for the country.

Objectives:

- To provide an appropriate learning environment where medical students can acquire a sound theoretical knowledge and practical skills with empathetic attitude to the people.
- To carry out research in medical sciences to scale up the standard of medical education in the country.

LOCATION

The campus is located at 31 and 32, Bir Uttom K. M. Shafiullah Sarak (Green Road), Dhanmondi, Dhaka. The location is at the heart of the mega city Dhaka and is facilitated with very good communication networks.

The Medical College and the Hospital complexes have been raised in a multistoried fully air-conditioned building with an arrangement of approximately 600 patients. The building is equipped with state-of-the-art infrastructure, excellent with an out-patient department and adequate in-patient facilities.

Hypoactive Sexual Desire Disorder (HSDD)

Testosterone for Women with Hypoactive Sexual Desire Disorder: Where Are We Now?

Hormones such as testosterone (T), together with their precursors, metabolites and overall activity, are well recognized. 'T' is the main male hormone that play a great role in developing Puberty, Reproductive health, Fertility issue, as well as in management of Hypoactive Sexual Desire Disorder (HSDD).[1]

The HSDD disease is caused by multifactorial agents. Diagnosis is difficult as it is related to physiological, psychological, social shyness and taboo. Also due to ignorance of patients and health care givers.[2]

We the health provider do not give proper attention and as we do not know what is disease – HSDD ourselves, we most of the time "laugh away" patients complain. For this attitude the patient become depressed anxious, make herself self-centered, irritated and stopped all sexual activity, and misunderstanding arises between partner and even in family member. For the efficient management of this disorder, we should counsel our consultants, juniors, GP & our health care providers, about HSDD syndrome, its diagnosis & management.

An increase number of women will experience Menopause earlier because of (1) premature ovarian insufficiency, (2) from chromosomal abnormalities, (3) genetic defects, (4) associated with autoimmune disorders (5) metabolic disturbances, (6) environmental factors, (7) from pelvic radiation, (8) chemotherapy, (9) surgical oophorectomy with BRCA mutation.

In these cases circulating ovarian hormone levels of androgen & estrogen are abruptly decreased. Besides every day estimated 40% of women of all ages are entering in menopause stage as a result of hysterectomy with or without oophorectomy alone.

In 1930 'T' used for gynaecological disease eg. DUB, Myoma, Dysmenorrhoea, Chronic Mastitis, Uterine, Endometrial and Breast Carcinoma. In 1930 lossen & in 1943 salmon at al , 1st described a correlation between 'T' and female libido.[3] This hormone is not used in maximum countries because of negative apprehension of using male hormones to female individuals and maximum people do not perceive testosterone as an important female hormone. Among all countries of the world Australia has allowed its use.[4]

About 50% of all circulating 'T' is produced by peripheral conversion of namely hydroepiandrosterone and androstenedione. 'T' its precursors, metabolized together with vascular and reproductive hormone of women and synthesized in the body by ovarian and adrenal glands.[5]

5α (five alpha) DHEA (dehydroepiandrosterone) is most potent androgen & 'T' precursors are week hormone. Studies demonstrated that estrogen alone therapy in post menopausal women is associated with a small to moderate improvement in dyspearenia, but no effect on libido, sexual desire, interest, orgasm.[6]

We know that sexual response is due to multifactorial agents – physiological, social, psychological & psychosexual effect of hormones eg. Estrogen. Progesterone, Prolactin, Oxytocin, and Neurotransmitters, Neuropeptide including Nitric Acid, Dopamine, Serotonin, Gama Amino Butyric Acid – these take important active role in SHDD syndrome.[7]

DHEA is changed to DHEAS in adrenal glands & liver. DHEA level may be low during different time of the day, and rate of production of 'T' and other steroid hormones, declines as one aged. In women when menopause occur ovaries completely cease to produce sex hormones estrogen, progesterone.[8]

Structurally, estradiol and androstenediol more or less alike. DHEA in menopausal women does not decline. About 50% of all circulating 'T' is produced by peripheral conversion of hydroepiandrosterone and androstenediol.

There is controversy about use of 'T' & its derivates in management of HSDD and other disease disorder. It's new invention, so other study required.

'T' its precursors, metabolized together with vascular and reproductive hormones of women are synthesized in the body by ovarian and adrenal glands. Dehydro-epiandrosterone hormone known as androstenolone is an endogenous steroid hormone precursor. It is on of the most abundant circulating steroids in human. HDEA is produced in the gonads, & in the brain.

DHEAS helps with the development of male sexual characteristics at puberty and also responsible in reproduction for both sexes. DHEAS levels peak around puberty and then get lower as one ages.

The DHEA & DHEAS play an important role in development and maintenance and survival of the nervous system. In men testies continue to release hormones even in older age.

DHEAS route of administration is Transdermal, Maximum - effect of the treatment is seen after use of 12 weeks and continue (in selected case for 6-12 months). Do drug holiday by withdrawing the medicine, & see whether further treatment required. DHEA test done by using blood, saliva and urine.

SHDD is caused by multiple factors :

(1) From multiple medical diseases

(2) From surgical procedures.

(3) From lack of 'T' & its derivatives in the body.

(4) Before prescribing 'T' exclude all causes other then deficiency of 'T'.

(5) Treatment could be firstly tried with estrogen and its derivatives.

(6) Estrogen specially conjugated Equine Estrogen can reduce the efficacy of 'T' by increasing SGHB levels.

(7) Instead of oral route, transdermal estrogen give better results / effectiveness/ & less side effects.

Main function of 'T' is to maintains

(1) Libido or sex drive or desire

(2) Bone & muscle health

(3) Maintaining or boosting mood, energy.

(4) A mixture of treatment may work best, example are

(i) Counseling, (ii) life style changes, (iii) medicines.

(5) Androgen including 'T' are essential for development and maintenance of female sex anatomy, physiology and modulation of sexual behavior.

Pros & Cons of treatment

If 'T' level is excess in the body – there is excess hair in body, loss of scalp hair, acne, genital enlargement, decrease breast size.

Note : Started colleting datas from 14th June 2025 to 29th September 2025.

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ORIGINAL ARTICLE

Nephroprotective Effects of *Ipomoea Aquatica* (Kalmi shak) And Ramipril in Gentamicin Induced Nephrotoxic Rats - A Comparative Experimental Study

MAHJABIN M[1], HOSSAIN MI[2], ISRAT UH[3], AKTER M[4], RAHMAN MA[5], SULTANA MM[6], CHOWDHURY SJ[7]

Abstract

***Introduction**: Acute kidney injury is an important public health problem in patients treated with gentamicin. Kalmi shak and ramipril have nephroprotective effects that can alleviate gentamicin induced nephrotoxicity. A study was carried out on a group of rats to evaluate the nephroprotective effects of kalmi shak and ramipril with their comparison.*

***Methods**: An experimental study was conducted to demonstrate the effects of ethanolic extract of kalmi shak and ramipril on blood urea and serum creatinine levels as well as histopathological changes in gentamicin induced nephrotoxic rats and the nephroprotective effects were compared with kalmi shak and ramipril respectively.*

***Results:** Blood urea and serum creatinine levels were significantly higher than the normal in gentamicin treated group. There were significant differences in blood urea and serum creatinine levels as well as histopathological changes in gentamicin to kalmi shak and ramipril treated groups. Another test revealed no significant differences in blood urea and serum creatinine levels as well as histopathological changes between the kalmi shak and ramipril treated groups. Nephroprotective effects were observed with ethanolic extract of kalmi shak which was almost similar to that of ramipril.*

***Conclusion:** Kalmi shak and ramipril have nephroprotective effect that can alleviate gentamycin induced nephrotoxicity which is comparable to each other, though exact mechanism could not be confirmed by this study.*

***Keywords**: Gentamicin, Ramipril, ipomoea Aquatica, Kalmi shak, Nephrotoxicity, Blood Urea, Serum Creatinine, Histopathology*

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Introduction:

Acute kidney injury (AKI) is a common clinical problem associated with high mortality and can occur in normal renal function or patients with preexisting renal diseases.[1] It was defined as sudden and usually reversible loss of kidney function which develops over a period of days or weeks[2] and is characterized by accumulation of urea and other chemical substances in blood.[3] Metabolites of the drugs that are excreted through kidney cause cellular damage with histopathological changes including vascular congestion, cellular oedema, mononuclear cell infiltrations leading to kidney dysfunction.[4]

Gentamicin is an aminoglycoside antibiotic. It is used to treat gram negative organisms and a popular choice by clinicians[5] due to its low cost and is also one of the nephrotoxic drugs that produce renal tubular damage which

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limits its frequent clinical prescription[6]. Abolition of nephrotoxicity of gentamicin can increase its clinical use by the prescribers.

Gentamicin causes oxidative stress, apoptosis, necrosis, upregulation of transforming growth factor B and increase monocyte-macrophage infiltration as well as generates superoxide anions, hydroxyl radicals, hydrogen peroxide and reactive nitrogen species in the kidney which are responsible for acute kidney injury.[6]

Different studies showed that antioxidants abolish gentamicin induced nephrotoxicity in rats. Antioxidants improve histopathological injuries like tubular necrosis, tubular cell oedema and apoptosis in gentamicin treated rats.[7] Many vegetables and fruit species in Southeast Asia have nephroprotective effects against gentamicin induced nephrotoxicity.[8] Kalmi shak is a cheaper and easily available vegetable to treat gentamicin induced nephrotoxicity, which has potent antioxidant effect.[9,10]

Ramipril is an angiotensin converting enzyme inhibitor that inhibits the renin angiotensin aldosterone system. It has specific nephroprotective effect, probably because of the role of angiotensin II, which drives the underlying glomerular hyperfiltration.[11] Losartan is an angiotensin II receptor blocker and has nephroprotective effect on gentamicin induced nephrotoxic rats.[12]

In this background a scientific study of nephroprotective effect of kalmi shak should be explored and develop a natural source that is readily available with low cost. In this study we made an attempt to evaluate the nephroprotective effect of ethanolic extract of kalmi shak in gentamicin induced nephrotoxic rats and nephroprotective effects were compared with ramipril. This study was carried out in the department of Pharmacology & Therapeutics at Dhaka Medical College, Dhaka.

Methods:

This experimental study was carried out in the department of Pharmacology and Therapeutics, Dhaka Medical College from July 2016 to June 2017. Twenty eight healthy Wistar Albino rats of both sexes weighing from 180 to 250 grams were collected from ICDDR'B. Gentamicin was purchased from a pharmacy which was manufactured by Opsonin Pharmaceuticals Ltd. Kalmi shak, which DACB accession number was 45091, were collected from a super shop and identified and authenticated by National Herbarium, Mirpur, Dhaka. Ethanol extracts were prepared in Drug Research Laboratory of Centre for Advanced Research of Sciences (CARS) of Dhaka University. Ramipril was purchased from a pharmacy which was manufactured by Opsonin Pharmaceuticals Ltd.

The experimental study was designed to demonstrate the effect of ethanolic extract of kalmi shak and ramipril on blood urea and serum creatinine levels as well as histopathological changes on gentamicin induced nephrotoxic rats and to compare the nephroprotective effects of ethanolic extract of kalmi shak and ramipril. The rats were divided into four groups (A, B, C & D) comprising 7 rats in each group. Rats were treated for nine days.

Group A was served as control group. Rats were given a standard diet for 9 days and were sacrificed on day 10.

Group B was gentamycin treated group. Nephrotoxicity was induced by intraperitoneal injection of gentamicin at a dose of 100mg/kg body weight for 9 days.[13,14] The rats were allowed the usual diet for the same duration and then sacrificed on day 10.

Group C was treated with ethanolic extract of kalmi shak (500mg/kg/day)[9] by gastric intubation and gentamicin (100mg/kg/day) intraperitoneally for 9 days with usual rat diet and then sacrificed on day 10.

Group D was treated with ramipril (1mg/kg/day)[15] by gastric intubation and gentamicin (100mg/kg/day) intraperitoneally for 9 days with usual rat diet and then sacrificed on day 10.

On day 10, blood samples were collected through cardiac puncture and sent to the department of biochemistry of Dhaka Medical College for biochemical analysis. The rats were then sacrificed and kidneys were dissected and stained with haematoxylin & eosin for histopathological examination. All results were appropriately recorded in computer. Statistical analysis was done by SPSS version 17 software. The variables were expressed as mean±SD. 'Unpaired student †s t test, ANOVA test and Post Hoc test were done for comparison of means.

Results:

Obtained data on blood urea and serum creatinine of the four different groups (A, B, C & D) were separately recorded and analyzed. Data were expressed as mean ± SE and presented accordingly in tables of a variable of the specific group. The results of the interventional groups were compared with that of the control.

At first, the data on groups A and B were compared to observe the effect of gentamicin on their blood urea and serum creatinine level as well as histopathological changes.

Secondly, the data on blood urea and serum creatinine level as well as histopathological changes of groups B, C, and D were compared to observe the effect of gentamicin, kalmi shak and ramipril respectively.

Finally, the blood urea and serum creatinine level as well as histopathological changes of group C and D were compared to observe the effects of kalmi shak and ramipril in gentamicin treated rats.

Table I

Effects of Gentamicin on blood urea and serum creatinine level in group B at day 10

Groups	N = 7	Blood urea level (mg/dl)		Serum Creatinine level (mg/dl)	
		Mean ± SD	p value	Mean ± SD	p value
A		21.43 ± 2.15	<0.001	0.49 ± 0.05	<0.001
B		84.43 ± 6.87		3.37 ± 0.55	

*unpaired t- test

Table I showed that mean blood urea and serum creatinine levels were higher in group B than in group A. This difference was statistically significant ($p<0.001$). An unpaired t test was done to find out the difference between individual groups.

Table II

Comparison of blood urea and serum creatinine levels between different groups (group B with C and D) at day 10

Groups	N = 7	Blood urea level (mg/dl)		Serum creatinine level (mg/dl)	
		Mean ± SD	p-value	Mean ± SD	p-value
B		84.43 ± 6.87	<0.001	3.37 ± 0.56	<0.001
C		68.43 ± 3.36		1.96 ± 0.10	
D		53.85 ± 11.55		1.67 ± 0.26	

*ANOVA test was done

Table II showed that mean blood urea and serum creatinine level was higher in group B and lower in group C and D. These difference was statistically significant ($p<0.001$). ANOVA test was done to determine the difference between individual groups.

Table III

Comparison of blood urea and serum creatinine level between group B and groups C and D at day 10

Groups	Mean± SE in blood urea level (mg/dl)	p value	Mean ± SE in blood creatinine level (mg/dl)	p value
Group B vs. C	16.00 ± 2.89	<0.004	1.41 ± 0.21	<0.004
Group B vs. D	30.57 ± 5.08	<0.001	1.70 ± 0.23	<0.001

*Post Hoc test (Games-Howell) was done

Table III revealed that there was a highly significant difference in blood urea and serum creatinine level of group B compared with group C and group D.

Table IV

Comparison of blood urea and serum creatinine level between group D with group C

Groups	Mean± SE in blood urea level(mg/dl)	p value	creatinine level (mg/dl) Mean ± SE in serum	P value
Group D vs. C	14.57 ± 4.55	0.102	0.29 ± 0.11	0.175

*Post Hoc test (Games-Howell) was done

Another Post Hoc test (Games-Howell) was done to compare blood urea and serum creatinine levels between groups D and C; no significant difference was observed (Table IV).

Histopathological observations

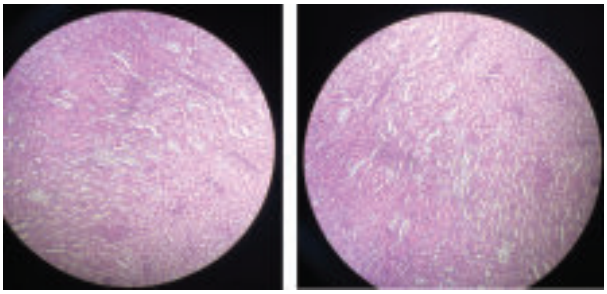

Figure 1: Microscopic photograph of group A

In group A the normal appearance of glomeruli, tubules and interstitium.

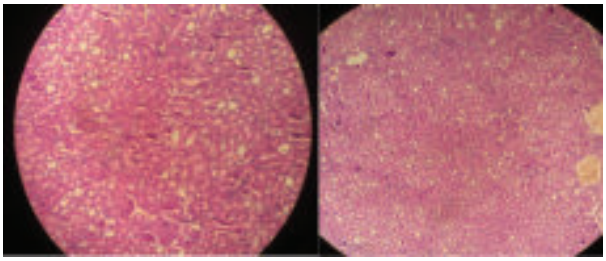

Figure 2: Microscopic photograph of group B

In group B there are moderate to severe distortion of renal architecture as well as glomerular congestion, early tubular necrosis and the interstitium was infiltrated with many lymphocytes.

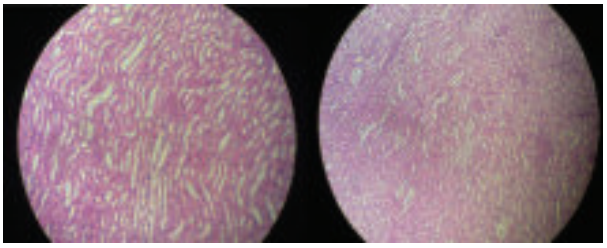

Figure 3: Microscopic photograph of Group C

Group C showed mild to moderate distortion of renal architecture with few to some areas with glomerular congestion and the interstitium infiltrated by few to some number of lymphocytes.

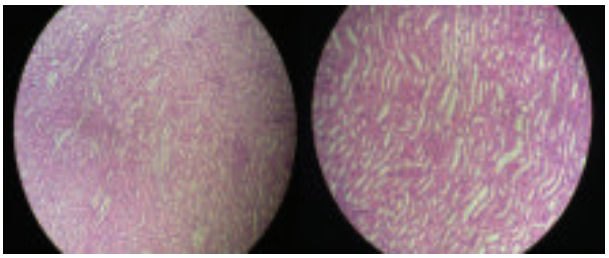

Figure 4: Microscopic photograph of Group D

Group D showed renal architecture with very few areas with glomerular congestion and the interstitium infiltrated with occasional number of lymphocytes.

Discussion:

The study was carried out to evaluate the nephroprotective effect of ethanolic extract of kalmi shak with a comparison to ramipril on experimentally induced nephrotoxic rats. Nephrotoxicity was generated by the intraperitoneal injection of gentamicin.

28 healthy adult Wistar Albino rats of both sex weighing 180-250 grams were selected for the study. Rats were divided into 4 groups (A, B, C, D) comprising 7 rats in each group. They were treated for 9 days. Group A served as the control group where the rats were given a standard rat diet for 9 days. Group B was gentamicin treated group and intraperitoneal administration of gentamicin (100mg/kg/day), and a standard rat diet were given for 9 days to them. Group C rats were treated with ethanol extract of kalmi shak (500mg/kg/day) by gastric intubation for 9 days, along with gentamycin (100mg/kg/day) intraperitoneally and standard rat diet. Lastly, group D rats were treated with ramipril (1mg/kg/day) by gastric intubation for the same period, along with gentamicin (100mg/kg/day) intraperitoneally and standard rat diet. On day 10, blood samples were collected and blood urea and serum creatinine levels were measured. At the same day the rats were sacrificed and the kidneys were preserved and prepared for histopathological study.

In this study, we found that the mean blood urea and serum creatinine level was 21.43 ± 2.15 and 0.49 ± 0.05 in group A which is almost similar with an earlier study.[16]

Accumulation of gentamicin leads to pathological events in gentamicin induced nephrotoxicity and subsequent renal dysfunction.[17] Gentamicin induced nephrotoxicity is functionally evident by the elevated serum levels of urea, creatinine and structurally characterized by tubular necrosis, glomerular atrophy, mononuclear cell infiltration, intertubular haemorrhage, and hyaline casts.[18,19] In this study, we found that the mean blood urea and serum creatinine level was 84.43 ± 6.87 and 3.37 ± 0.56 respectively with a p value of <0.001, and histopathologicaly there were severe distortion of renal architecture, glomerular congestion, early tubular necrosis and interstitial infiltration with more lymphocytes in gentamicin treated rats in group B which is statistically significant and also reported by another study.[20]

In current study, we found that mean blood urea and serum creatinine level in group C were 68.43 ± 3.36 SD and 1.96 ± 0.10 SD respectively with a p value of <0.001 which is

statistically significant and histopathologicaly there were mild to moderate distortion of renal architecture, few to some areas of glomerular congestion and infiltration of interstitium by few to some number of lymphocytes. Kalmi shak has nephroprotective effect in gentamicin induced nephrotoxic rats which was also observed by other studies.[9,10]

We also observed that mean blood urea and serum creatinine level in group D were 53.85 ± 11.55 SD and 1.67 ± 0.26 SD with a p value of <0.001 which is statistically significant. Losartan has nephroprotective effect of gentamicin induced nephrotoxic rats which was observed in a study.[12] In this study, we tried to find out the nephroprotective effect of ramipril and found that it has nephroprotective effects in gentamicin induced nephrotoxic rats.

In our study, we found that the difference between mean blood urea and serum creatinine level in group C and group D were 14.57 ± 4.55 SE and 0.29 ± 0.11 SE with a p value of 0.102 and 0.175 respectively which is statistically insignificant and in histopathologically there were mild to moderate distortion of renal architecture, few to some areas of glomerular congestion and infiltration of interstitium by few to some number of lymphocytes with kalmi shak treated rats and in ramipril treated rats showed preserved renal architecture with very few area of glomerular congestion and infiltration of interstitium by very few lymphocytes. The nephroprotective effect of kalmi shak was demonstrated in gentamicin induced nephrotoxic rats and comparable with the nephroprotective effect of ramipril. Increased blood urea and serum creatinine levels were significantly protected and histological architecture observed almost normal in experimentally nephrotoxic group when treated with ethanolic extract of kalmi shak and ramipril.

Antioxidants can inhibit or abolish gentamicin induced nephrotoxicity in rats. They improve histological injuries such as tubular necrosis, tubular cell edema and apoptosis in gentamicin treated rats.[7]

This study observed that the ethanolic extract of kalmi shak has nephroprotective effect on gentamicin induced nephrotoxic rats which is comparable with ramipril. Results of this study suggest that kalmi shak may be an effective, easily available and cheap nephroprotective agent. However, more studies would be necessary to validate the claim and explore the mechanism of action for application in human population.

Study Limitation:

1. Sample size was small and gender variation could not be evaluated.
2. Modern drugs and herbal products were used to influence the biological system. Natural system has certain limitations like individual variation and interference in response to the system which might have interfered with results. So, results obtained in this study may differ somewhat from the exact effect.

Conclusion:

Despite limitations, interpretation of results obtained in this study was made cautiously and carefully. Co administration of kalmi shak with gentamicin abolish the gentamicin induce nephrotoxicity as like as ramipril. Further studies are needed to identify and characterize before being establish it in clinical setting.

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None

Conflicts of Interest:

There are no conflicts of interest.

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ORIGINAL ARTICLE

Occupational Health Hazards and Safety Practices among Auxiliary Health Workers in Green Life Medical College and Hospital

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Abstract

Introduction: *Healthcare workers are prone to occupational hazard. The study was aimed to find out the occupational health hazards and safety practices among the auxiliary health workers of the Green Life Medical College and Hospital.*

Methods: *A descriptive type of cross sectional study was carried on auxiliary health workers of Green Life Medical College and Hospital who were nurses and technologists. The study was conducted from October 2022 to December 2022 by face to face interviewing of nurses and technologist by pretested semi-structured questionnaires. The study was conducted among 207 respondents. Convenient type of non-probability sampling was done to collect the required information. The data was analyzed both manually as well as by computer based software name MS Excel.*

Results: *According to the study, majority (75.8%) of the respondents had their official post as nurse while about 24.1% of them were technologist. Majority of the respondents (68.1%) were within the age group of 17 to 27 years. Among the respondents majority (51.6%) had diploma degree and 4.3% had master's degree. Regarding the monthly income, majority (42.5%) had monthly income within range from 16,000 to 20,000 taka. Majority (90.8%) of the respondents heard about occupational health hazards. A majority (96.1%) had perception that Hepatitis B and C infection is caused by sharp cutting injury, about 88.4% of the respondents told yes about Tetanus. Furthermore, majority (82.3%) had Perception on acute Radiation sickness and about 98% heard about personal protective equipment. About 81.7% had perception that lead apron can prevent excessive radiation exposure. About 96.4% had perception that long working hours cause mental illness. Most of the respondents (71.4%) had work experience of less than 5 years but only 12.5% of them had work experience of 11 to 15 years. Most (91.7%) of the respondents' daily working hours was 6 to 11 hours. About 63% had exposure to needle or sharp cutting injury. A vast majority (93.5%) of respondents sterilized their wounds by antiseptic. According to the respondents, 86.5% had stress for long working hours. About 90% wore disposable gloves while working with sharp instruments. Majority (83.5%) of the respondents used PPE when working in the laboratory. But about half (51.8%) of them did not use any lead apron during work with X ray machine. Among them majority (87%) did not use dosimeters on aprons during work with X ray machine. More than half (55.6%) of the respondents had received training on safety practices from hospital. About 75.1% agreed about supervision of wearing personal protective equipment. About 98.5% respondents told they used separate colored containers to dispose of medical waste. According to the respondents, about 68.5% had taken full dose of hepatitis B vaccine and about 74% had taken full dose of tetanus vaccine. According to the respondents about 10.6% had hypertension, 7.7% had drug allergy, 5.5% had skin disease as well as asthma and 3.3% had diabetes.*

Conclusion: *The survey showed that most of the auxiliary health workers were generally well aware of occupational hazards and safety practices but still there are some unsafe practices. Strengthening the implementation of safety standards and proper supervision can cope with this situation.*

Keywords: *Occupational Health Hazards, Auxiliary health worker, Safety practices in hospital*

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Introduction:

Hospitals are a breeding ground for pathogens and those who are the most susceptible to acquiring these pathogens are the staff who have to spend hours after hours working in hospitals around the world. The health and well-being of employees in the workplace are important concerns that should continue to receive attention in any organization.[1]

Health is a state of complete physical, mental and social wellbeing and not merely an absence of disease or infirmity so that each citizen can lead a socially and economically productive life.[2] Those who are burdened with the responsibilities to help maintain our health are themselves affected by a non-supportive working environment. This non-supportive working environment is termed an occupational health hazard.[3] Occupational hazards exist almost in every occupational group. The severity of occupational hazards depends on the nature and type of occupation.[4] Nursing is uniquely a hazardous occupation. Some potential hazards include biological hazards, physical hazards, toxic chemicals and needle stick injuries. The key safety issues impacting this work include needle stick injuries, workplace violence and musculoskeletal injuries related to patient handling and workload. The vast majority of nurses experience persistent job-related pain.[5]

Among the health care workers, paramedical employees are an integral part of hospital staff. Their nature of the job is to investigate body fluids such as blood, serum, urine, sputum, and muscle tissues so as to find bacteria and other diseases that existed in them. They handle various electrical and electronic equipment and instruments such as the analyzer, microscope, centrifuge and various chemicals in their day-to-day work life to investigate body fluids and other tissues.[3]

The aim of the study was to identify health hazards of auxiliary health workers of Green Life Medical College & Hospital and will take initiative to mitigate those hazards thereby preventing potential accidents from occurring.

Methods:

It was a cross sectional type of descriptive study conducted from October 2022 to December 2022 among the auxiliary health workers of the Green Life Medical College and Hospital. About 207 auxiliary workers were selected for data collection by convenient type of non-probability sampling. Data were collected by face to face interviewing of auxiliary workers of Green Life Medical College and Hospital using semi-structured questionnaire which was pretested before data collection. Data were collected on socio-demographic details of the respondents, perception of the health hazards and safety practices of the respondents, patterns of health hazards exposed by the respondents, safety practices among auxiliary workers, safety management system status existing in hospital, medical and immunization status of the respondents. After collection of the data each questionnaire was checked for inconsistency. The data was analyzed both manually and on a computer based software Microsoft Excel.

Results:

In table I shown, more than half (68%) of the respondent' age was between 17 to 27 years and female students (73.9%), about 51.6% respondents' had diploma degree and about 42.5% had income from 16000 to 20000 taka.

Table- I

Distribution of respondents by socio-demographic characteristics (n= 207)

Variables	Frequency (n)	Percentage (%)
A. Age of respondents in year		
17 to 27	141	68.1
28 to 38	41	19.8
39 to 49	16	7.7
>50	09	4.3
B. Gender		
Male	54	26.1
Female	153	73.9
C. Religion		
Islam	133	64.2
Hinduism	65	31.4
Christianity	09	4.3
D. Level of education		
Up to SSC level	14	6.7
Up to HSC level	41	19.8
Diploma	107	51.6
Bachelor	36	17.3
Masters	9	4.3
E. Monthly income in taka		
5000 to 10000	51	24.6
11000 to 15000	24	11.6
16000 to 20000	88	42.5
>20000	44	21.2

In fig-1 shown, Majority of the respondents (75.8%) had their official post as being nurses while about 24.1% of them are technologists.

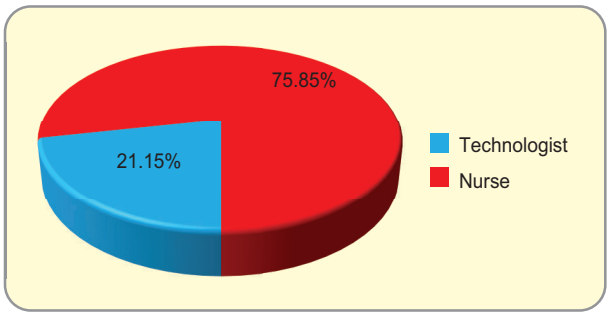

Fig-1: *Distribution of respondents according to profession*

In table II shown, more than half (95.28%) of the respondents' had perception of needle stick or sharp cutting injury can cause blood-borne disease, 81.73% had perception about lead apron can prevent excessive radiation exposure, 98% heard about personal protective device.

Table- II

Perception of health hazards and safety practices of respondents

Variables	Frequency (n)	Percentage (%)
A. Perception of needle stick or sharp cutting injury can cause blood-borne disease (n=191)		
Yes	182	95.28
No	9	4.71
B. Perception about direct contact with harmful chemical agents can cause skin cancer (n=167)		
Yes	144	86.22
No	23	13.77
C. Perception about lead apron can prevent excessive radiation exposure (n=115)		
Yes	94	81.73
No	21	18.26
D. Perception of hearing about PPE (Personal Protective Device)(n=207)		
Yes	203	98
No	04	02
E. perception of long working hours causing mental illness (197)		
Yes	190	96
No	07	04

In table III shown, more than half (71.49%) of the respondents work experience duration was <5 years, 92% respondents work duration daily for 6 to 11 hours, 63.7% exposed to needle injury, 93.50% sterilized their wound by antiseptic, 86.50% being stressed for long working hours.

Table- III

Health hazards exposed by the respondents

Variables	Frequency (n)	Percentages (%)
A. Duration of their work experience at Green Life Medical College and Hospital (n=207)		
< 5 years	148	71.49
5 to 10 years	28	13.53
11 to 15 years	26	12.56
>15 years	05	2.42
B. Duration of work daily at Green Life Medical College and Hospital (207)		
Less than 6 hours	5	2.42
6 to 11 hours	190	92
11 to 15 hours	10	05
More than 15 hours	2	01
C. Exposure to needle or sharp cutting injury (n=195)		
Yes	123	63.07
No	72	36.92
D. How they sterilize their wounds after getting injured (207)		
By soap and water only	03	2.44
Did not sterilize	00	0
By antiseptic	115	93.50
By Others	05	4.06
E. being stressed for long working hours (n=207)		
Yes	179	86.50
No	28	13.50
F. Whether they have been a victim of violence (physical/ verbal/ sexual) at their workplace (n=207)		
Yes	22	10.60
No	185	89.40

In table IV shown, majority (90.87%) of the respondents weared disposable gloves while working with sharp instruments, 83.58% used personal protective equipment while working in the laboratory, 51.80% did not use lead apron and 87.02% did not use dosimeter during working with x-ray machine.

Table-IV

Safety practices among auxiliary workers

Variables	Frequency (n)	Percentages (%)
A. Wearing disposable gloves while working with sharp instruments (n=197)		
Yes	179	90.87
No	18	9.13
B. Material they used to sterilize their hands after attending patients (n=207)		
By soap and water only	25	12
By sanitizer	181	87.50
Others	01	0.50
C. Usage of personal protective equipment when working in the laboratory (n=134)		
Yes		112
83.58		
No	22	16.41
D. Usage of lead apron during working with X-ray/CT scan machine (n= 83)		
Yes	40	48.19
No	43	51.80
E. Wearing dosimeters on aprons during working with x-ray/CT scan machine (n= 77)		
Yes	10	12.98
No	67	87.02

In table-V shown, 55.56% received training from hospital regarding safety practices, 75.2% told yes about supervision of wearing personal protective equipment, 98.55% used separate colored containers to dispose medical waste.

Table-V

Safety management system status in hospitals

Variables	Frequency (n)	Percentages (%)
A. Receiving any training from the hospital regarding safety practices (n=207)		
Yes	115	55.56
No	92	44.44
B. Supervision of wearing personal protective equipment (n=189)		
Yes		156
75.2		
No	51	24.8
C. Usage of separate-colored containers to dispose of the medical waste (n=207)		
Yes	204	98.55
No	3	1.45

In figure 2 shown, 96.15% and 88.46% respondents had perception about sharp cutting injury can cause hepatitis B and C furthermore tetanus infection respectively.

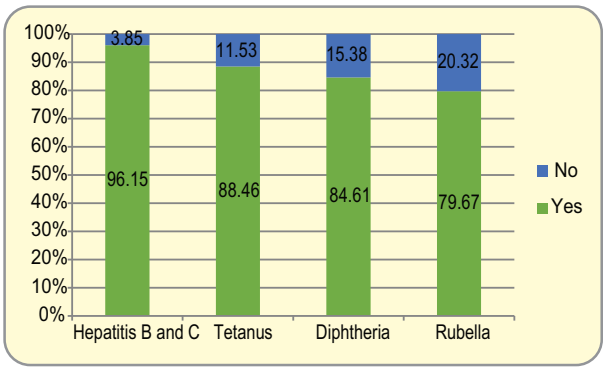

Figure 2: Distribution of the respondents according to perception about sharp cutting injury can cause infections (n=207)

In figure 3 shown, 68.59% and 74.39% respondents took full dose of hepatitis B and tetanus vaccine respectively.

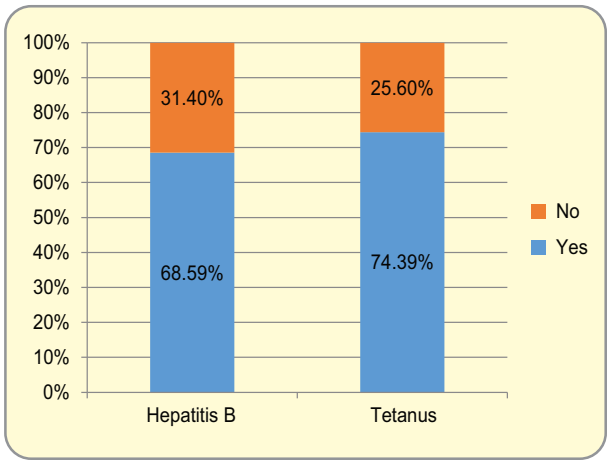

Fig-3: *Distribution of respondents according to taking the full dose of Hepatitis B and Tetanus vaccine (n=207)*

Discussion:

In this study, majority of the respondents were female (73.9%) followed by male respondents (26.1%), which was comparative to a study conducted in India that showed 73.3% female and 26.7% male. [4] Among the respondents 68.1% were between 17 and 27 years. In another study in India, 28% were between 26 and 30 years and 22% were above 30 years of age.[3]

Our study showed, 51.7% respondents had diploma degree and only 4% had master's degree. In a study in Khulna 54.28% respondents in the private sector were educated at the secondary level and only 8.57% of them

had basic diploma in nursing, whereas in a govt. hospitals all of them had (100%) diplomas in nursing.[6] Monthly income of our respondents was between 16000 to 20000 taka bears 42.5%, more than 20000 taka bears only 20%. In a study in Khulna in 2021, all (100%) nurses working in the private hospital had income between 1000 and 5000.[6]

In our study, most of the respondents (71.4%) had work experience less than 5 years but only 12.5% of them had work experience of 11 to 15 years. Another study in Khulna, 30% had experience about 5 to 10 years and above for both government and private sectors.[6]

As per our study, 93.5% used antiseptic to sterilize wounds after getting injured. A study in Nepal showed that 64.6% washed site of injury with soap and water.[7] Majority (87%) of respondents did not use dosimeters on aprons during work with X-ray machines. In a study in Kansas City USA, 94.4% of technologists did not use dosimeter.[8]

In our study 55.6% had received training from the hospital. During field survey in Khulna, it was found that most of the respondents (69%) in the govt. hospitals have received training.[6]

Through our survey, we found that 98.5% of respondents used separate-colored containers to dispose medical waste. Another study in Bangladesh, while 90% disposed their waste in NGOs covered vans.[6] In our study, majority (74.3%) had taken the full dose of vaccine for Tetanus while about 68.5% had taken the full dose of vaccine for Hepatitis B. In a study in Tripoli, Libya, 78.2% of healthcare workers were vaccinated.[9]

Conclusion:

Majority of the respondents had perception of needle stick or sharp cutting injury can cause blood borne disease and most of them also knew about Hepatitis B and C infection and also tetanus being caused by sharp cutting injury.

Most of them had perception of direct contact with harmful chemical agents can cause skin cancer. They were acknowledged about using personal protective equipment like- using gloves while attending patients and working with sharp instruments; lead apron can prevent excessive radiation exposure. But unfortunately, few of them used lead apron and dosimeter during work with x- ray machine.

Few people had working experience for many years beside the respondents who had less years of working experience, both of them faced stress for long working hours daily. More than half of the respondents had received training about safety management from the hospital and acknowledged about wearing personal protective equipment; using separate colored containers to dispose medical waste. Majority of respondents were immunized against Hepatitis B infection and Tetanus. The consequences of occupational health hazards could be reduced by ensuring their educational qualification and knowledge about occupational health hazards and safety practices before recruit, by ensuring adequate supply of protective devices in their work place, by ensure pre-placement medical examinations before they are recruited such as any drug allergy, immunization status, by Practicing proper hand washing before and after each procedure, by Ensure their immunization against infectious diseases. In case of x-ray technologist ensure about wearing lead apron and dosimeter, periodic examination of workers should be done every 6 months, by arrange periodic health education program about health hazards and safety practices for them.

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Treatment and Outcome of Intra Nasal Steroids Spray on Pediatric Sleep Disordered Breathing Due to Enlarged Adenoids

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Abstract

Introduction: *Sleep disordered breathing (SDB) in children is described as a spectrum of respiratory abnormalities ranging from loud snoring to obstructed sleep apnea. Common symptoms include snoring, mouth breathing, daytime sleepiness, fatigue, mood disturbance and irritability. Complications of SDB are multi system like cardio-respiratory, neuro-cognitive, endocrine and metabolic disturbances. Adenotonsillar hypertrophy is the commonest cause of SDB and choice of treatment is adenotonsillectomy under general anesthesia. This study was done to diagnose SDB caused by adenoid hypertrophy and evaluation of impact of the disease on quality of life (QOL) in children and to evaluate the efficacy of intranasal steroid (fluticasone furoate) spray in pediatric SDB with QOL by using OSA-18 questionnaires.*

Methods: *It is a prospective observational study conducted among 52 children (2-12 years old). All patients received intra nasal fluticasone furoate spray (27.5 microgram) in each nostril once daily for 8 weeks. They were evaluated at pretreatment and post treatment with obstructive sleep apnea (OSA-18) quality of life questionnaire. Study was done during 1-year period of time in a tertiary care center, Green Life Medical College, Dhaka.*

Results: *Statistically significant improvement ($p<0.000$) in QOL was observed in 73.1% patients who were recruited for the study. The mean pre medication OSA-18 total score showed 78.3 improvement to 46.83 in post medication.*

Conclusion: *Medical treatment with intranasal steroid (fluticasone furoate) nasal spray for 8 weeks can be an effective treatment option in pediatric SDB patients due to enlarge adenoid without significant complications. OSA-18 questionnaires are quick, validated survey procedure of evaluating sleep disordered breathing in children as well as assessment of quality of life. So medical treatment can be an alternative to surgical treatment in children with mild to moderate SDB and surgical management is only indicated in severe cases when medical treatment fails.*

Keywords: *Adenoid hypertrophy, Fluticasone furoate, sleep disorder breathing, Obstructive sleep apnea, Quality of life*

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Introduction:

Pediatric sleep disorder breathing (SDB) is a general term for breathing difficulties during sleep. SDB can range from loud snoring to obstructive sleep apnea (OSA), a condition where a part of upper airway is blocked repeatedly during sleep and produce temporary cessation of respiration.[1] SDB was first documented in 1976 by Guillemin Ault et al.[2] It represents a group of patho-physiological condition that is characterized by an abnormal respiratory pattern during sleep that can be isolated or coexist with respiratory, nervous, CVS and endocrine diseases. SDB is now well-known breathing problem and widely distributed in general pediatric population about 6-10%.[1,3] It is responsible for contribution to numerous problems ranging from fragmental sleep pattern to hypertension, growth retardation, neuro-cognitive disorder, cardiac arrhythmia and even death.[4,5]

There are numerous factors affecting upper airway size and patency. Among them, enlarged adenoid is the most common cause. Adenoid is a pad of lymphoid tissue present at the junction of roof and posterior wall of nasopharynx. When sufficiently enlarged due to infection, allergy or asthma it produces bilateral nasal obstruction, sleep disordered breathing ranging from primary snoring to OSA syndrome.[5,6]

Polysomnography (PSG) is a gold standard test for diagnosis of OSA or SDB, but pediatric PSG is not widely and easily available, more over it is costly and time consuming. In our current study, SDB was diagnosed on basis of clinical features, nasal endoscopy or x-ray nasopharynx lateral view and quality of life due to SDB by OSA-18 Questionnaires.[6,7]

Adenoidectomy is the choice of treatment in SDB due to adenoid hypertrophy and is well demonstrated but it may recur after incomplete surgery or by Coblation surgery in 8-12% cases.[7,8] Again some parents do not want to undergo surgery due to intra operative and post-operative complications. Some patients may have contraindication to surgery under general anesthesia.

Thus alternate, non-surgical approaches are well thought and topical nasal steroids were proposed by many authors from the past decade.[9,10,11]In our current study we planned to see the clinical efficacy of intra nasal steroid spray (fluticasone furoate) for 8 weeks in reducing enlarged adenoid size, increase patency of nasopharynx and also symptomatic healing of SDB with increase quality of life (QOL) according to OSA-18 questionnaires score.[12,13,14]

Methods:

This is a prospective observational study, conducted among total 52 pediatric patient (male 32, female 20) ranging from 2 to 12 years old attending ENT / pediatric outpatient department of Green Life Medical College Hospital Dhaka from 2020 to 2021 and diagnosed as sleep disorder breathing (SDB) due to enlarged adenoid, insufficiently upper airway and clinical sign symptoms.

The diagnosis was based on symptoms like: bilateral nasal blockage, loud snoring for last three months or more, mouth breathing, nasal discharge, problem during sleep, repeated middle ear infection, otitis media with effusion and growth retardation. Among the study population, X-ray nasopharynx (lateral view) showed enlarged adenoid of different grade and compromised air way. Patients who attended as a diagnosed case of SDB with enlarged adenoid of different grade for adenoidectomy were also included in this study.

Children who used topical or systemic steroid within last 6 months, children with history of nasal bleeding, immunodeficiency disorder, cranio-facial, neuromuscular or genetic disorder, nasal obstruction due to gross deviated nasal septum or sinusitis, with upper respiratory tract infections within 2 weeks of enrollment in this study, presence of grade 4 adenoid hypertrophy and have systemic complications were excluded from the current study

Counseling of parents or caregiver of each patient was done followed by obtaining informed consent for participation in this study. Instructions were given regarding how to fill up OSA-18 questionnaire and how to use fluticasone furoate nasal spray.

OSA-18 questionnaire was filled before and after use fluticasone furoate nasal spray to observe improvement in symptoms. The study population used fluticasone furoate, one spray (27.5 microgram) in each nostril daily for 8 weeks. Then again fill up the OSA-18 questionnaire to assess improvement of QOL of the children having sleep disorder breathing.

OSA-18 questionnaires survey is a trusted validated and sensitive QOL measurement tools used primarily in children with SDB, obstructive sleep apnea and adenoid / tonsillar hypertrophy. It was developed by Franco et al. in 2000. The survey includes 18 items divided into 5 domains: Each item score ranges from 1 to 7 (1- no problem and 7- worst possible problem). Total score range: 18 to 126. Score range < 60 indicate mild impact on QOL, score of 60-80 has moderate impact and score > 80 it has severe impact on QOL.

Results:

The study population consists of 52 children, of which 61.5% (n=32) were male. The mean age at inclusion into the study was 7.54 years (SD=3.638). The OSA-18 survey was answered by their parents (the mother in over 59.6% of cases). About 65.5% of the children slept in the same bedroom with their parents.

Table I

Characteristics of study population

Variables	Values
Number of subjects	52
Age (in years)	7.54±3.638
Gender (Female/Male)	20 (38.5%)/32 (61.5%)
Height (in meter)	1.2115±0.23253
Weight (in kg)	26.21±11.012
BMI (in kg/m^2)	26.25±10.994
Previous History of Disease	
Asthma	24 (45.3%)
Laryngitis	20 (37.7%)
Urticaria	8 (15.1%)

Table I summarizes the demographic data including the patient's age, gender, height, weight, BMI and history of disease.

Table II

Frequency of symptoms in children with Sleep Disorder Breathing (SDB) in the pre-medication assessment (during their first visit before giving Fluticasone Nasal Spray)

Symptoms	Frequency n (%)
Nasal obstruction	41 (78.8)
Snoring	43 (78.8)
Restless sleep	42 (80.8)
Apnoea	42 (80.8)
Rhinorrhoea	38 (73.1)
Sialosis	35(68.2)
Frequent Sneezing	36(69.3)
Repeated upper airway infection	40(77.0)
Repeated otitis	33(63.5)

Clinical assessment of patients during first visit presenting with nasal obstruction symptoms such as snoring, restless sleep, apnea during sleep, rhinorrhoea, frequent sneezing, sialosis, repeat upper airway infection, repeat otitis, during the pre-medication assessment, are shown in Table II.

Table III shows the total OSA-18 items in pre-medication and post-medication assessment. The pre-medication OSA-18 survey demonstrated small impact on the QOL in 4 children(7.7%), moderate impact in 31 children (59.6%), and severe impact in 17 children (32.7%).The mean time between administration of fluticasone furoate nasal spray and the follow-up visit was 56 days (SD= 12.92). A correlation of the medical assessment after 8 weeks of fluticasone furoate nasal spray administration with the impact on QOL according to the post-medication OSA-18 survey revealed that 38 (73.1%) of children were classified as having mild or low or small impact.

Table III

Total OSA-18 items' scores category on the pre-medication and post-medication assessment

Category	Pre-medication (n, %)	Post-medication (n, %)
Small impact on health-related quality of life	4 (7.7)	38 (73.1)
Moderate impact on health-related quality of life	31 (59.6)	10 (19.2)
Severe impact on health-related quality of life	17 (32.7)	4 (7.7)

Table IV

Total and domain pre and post-medication scores with level of significance by Linear Regression

Domain	Mean of pre-medication OSA-18 survey	Mean of post-medication OSA-18 survey	Mean differences between the pre-medication & post-medicatio means (CI 95%) Post-medication	p value
Sleep disturbances	17.74	10.32	7.42	
…loud snoring?	4.33	2.90	1.43	0.005
...periods in which breathing stopped or air seemed trapped during the night?	5.12	2.63	2.49	0.017
...choking noise or breathlessness while sleeping?	4.25	2.69	1.56	0.005
...restless sleep or frequent awakening during sleep?	4.04	2.10	1.94	0.230
Physical suffering	17.87	10.68	7.19	
...mouth breathing due to nasal obstruction?	4.17	3.37	0.8	0.001
...frequent common colds or upper airway infection?	4.27	2.48	1.79	0.121
...nasal secretion or runny nose?	4.81	2.31	2.5	0.857
...eating difficulties?	4.62	2.52	2.1	0.000
Emotional distress	13.46	7.08	6.38	
...change in humour or rage?	4.15	2.31	1.84	0.011
...aggressive or hyperactive behaviour?	4.98	2.25	2.73	0.000
... problems with discipline?	4.33	2.52	1.81	0.129
Daytime problems	11.68	8.23	3.45	
...drowsiness or excessive daytime naps?	4.04	2.52	1.52	0.000
...poor concentration or attention?	3.62	2.90	0.72	0.000
...difficulty to wake up in the morning?	4.02	2.81	1.21	0.001
Caretaker concern	17.55	10.52	7.03	
...leave you worried about the general health of your child?	4.50	2.27	2.23	0.045
...created a concern that your child is not breathing enough air?	4.29	2.33	1.96	0.002
...interfered in your ability to carry out your daily activities?	4.38	2.50	1.88	0.000
...made you feel frustrated?	4.38	3.42	0.96	0.000
Total OSA	78.3	46.83	31.47	

Table IV shows the mean pre-medication and post-medication the OSA-18 survey by linear regression. The mean pre-medicated total score was 78.30 (SD=8.091), and mean post-medication total score 46.83 (SD = 7.998), with a statistically significant p Value (p=0.000). Each domain of this survey significantly shows the difference before and after treatment. All total domain mean difference the pre-medication and post- medication is 31. 47, and domain scores (before and after medication) were statistically significant (p= 0.000).

Table V

Correlation between change in OSA-18 parameters and change in adenoid size (%)

	p value
Sleep disturbance	0.002
Physical suffering	0.001
Emotional distress	0.003
Daytime function	0.016
Caretaker concerns	0.021

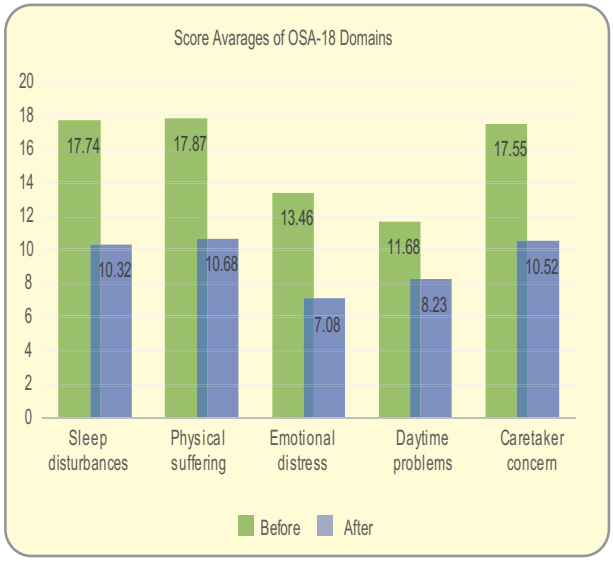

Figure 1: Comparison of symptom score between before and after 8 weeks course of Fluticasone furoate nasal spray

Table VI

Pre and post medication adenoid category with level of significance by Linear Regression

Adenoid Category	Mean of pre-medication	Mean of post-medication	Mean differences between the pre-medication and post-medication means (CI 95%)	p value Post-medication
Adenoid Size	64.4	30.7	33.7	0.014
Adenoid Grade	3.28	2.12	1.16	0.008

Table 6, show the adenoid category on the pre- medication and post medication assessment. The mean adenoid size occupying percentage of the space was 64.4+-12.3% (p=0.215 before medication and 30.7+-14.6 (p=0.014) after medication. The mean adenoid grade was 3.28+-0.54 (p=0.192 before medication and 2.1222+-0.43 (p=0.008) after medication.

Discussion:

Adeno-tonsillar hypertrophy is the common cause of pediatric sleep disorder breathing. In this prospective study we observed significant decrease in adenoid size and improvement in QOL by adopting OSA-18 questionnaires survey score in children treated with Fluticasone Furoate nasal spray (Glucocorticoid) once daily for 8 weeks. Among the OSA-18 questionnaires survey main items; sleep disturbance, physical suffering and emotional distress result were improved significantly while caregiver concern result was also improving but not significantly.

In our study we chose Fluticasone furoate glucocorticoid nasal spray among many other commercially available glucocorticoid nasal spray (Beclomethasone propionate, Budesonide, Mometasone furoate and Triamcinolone acetonide) for short time use. Because it has high potency, very low systemic absorption, well tolerated, no effect on the hypothalamic pituitary adrenal axis, no effect on growth in children. Moreover, it has anti-inflammatory, anti-edematous, anti-allergic property and has no local side effect like dryness of nose, nasal bleeding or nasal septum perforation.[15,16,17,18]

There are many studies evaluating intra nasal steroid effect on adenoid size. First study was done in 1995 in which they used Beclomethasone nasal spray for adenoid hypertrophy. After 8 weeks of treatment, the adenoid size mean reduction in adenoid choana ratio was 29% and 82% reduction in group mean nasal obstruction score.[19]

Berlucchi et al 2008 assessed the efficacy of an intranasal steroid (Mometasone Furoate) in the treatment of adenoid hypertrophy for 40 days treatment duration and 77.7%

children significantly decrease adenoid size and improve in their day-to-day symptoms.[13]

In other study of Hason Demirhan et al 2010 use fluticasone propionate nasal drops at 400 micro gram per day for enlarged adenoid for 8 weeks duration and showed a dramatic decrease in total symptom score from- 13.7 to 2.96. This difference was statistically significant ($p<0.05$). And the average adenoid / nasopharyngeal choana (A/C) ratio dropped from – 87% to 56 %. About 76% of treated children didn't require surgical intervention.[20] This study is similar to our study. OSA-18 questionnaires survey of quality of life assessment is well established in such studies, though Demirhan did not report it specifically.

In most recent study by Md.Mazharul Islam et al, 2018 on adenoid related SDB, use of Fluticasone Furoate intra nasal spray for 4 weeks duration to assess improvement of clinical symptom and QOL by OSA-18 questionnaires.[21] The average total score showed improvement from 60.95 to 46.37, which is also similar to our study.

In our study patients showed decrease adenoid size occupying percentage of the choanal area was 52.2#13.4% before medication and 34.6 #12.8 after medication. The mean adenoid grade was 2.98 #0.44 before medication and 2.32 # 0.51 after medication.

The pre mean pre medication and post medication scores and their difference based on OSA-18 survey by linear regression the mean pre medicated total score was 78.30 (SD= 8.091) and the post meditational total score 46.83(SD=7.998) a statically significant difference (P=0.000)

Total OSA-18 items scores following medication, compared to the classification of the impact on QOL seen in pre medication assessment and also post OSA-18 survey changed from 59.6% to 19.2% in children with moderate impact on the QOL and from 32.7% to 7.7% in children with severe impact on the QOL.

Several methods (x-ray nasopharynx lateral view, Nasal endoscopy, CT scan) have been used to evaluate adenoid size and patency of nasopharyngeal airway.[22,23]

CT scan is costly, nasal endoscopy is safe, reliable and simple method but not easy to perform in children. So, we choose X-ray nasopharynx (L/V) to see adenoid size and grade. Adenoid nasopharyngeal ratio(AN ratio) was obtained by dividing the measurement for A by value of N for each of the ratio. Graphs the AN ratio was computed according to the method of Fujioka et el .[22]

We have used the OSA-18 survey for evaluating the efficacy of short time intranasal steroid (fluticasone furoate) spray in symptomatic improvement of SDB and QOL. In our study highest improvement was noticed in sleep disturbance domain followed by physical suffering and parental or caretaker concern. The OSA-18 questionnaires survey was used in several studies as a determiner of the efficacy of treatment and its outcome [24,25,26,27]. It is convenient and easily practicable. In our study there is a significant improvement in OSA-18 score after treatment with fluticasone furoate nasal spray for 8 weeks. There are some limitations of this study which included: absence of control group, lac of long-term follow-up and not using nasal endoscopy to assess adenoid size.

Conclusion:

Medical management with intranasal steroid (Fluticasone furoate) spray for 8 weeks can be an effective treatment option in pediatric SDB patients due to enlarge adenoid without significant complications. OSA-18 questionnaires are a quick, easily reproduce, disease specific and QOL evaluator subjective survey. Being subjective survey, it should be used in conjunction with clinical and radiological assessment to diagnosis SDB and improvement of symptoms with quality of life. Thus, we can conclude this medical treatment can be provide an alternative to surgical treatment in children with mild to moderate SDB and surgical management is indicated in severe cases where intranasal steroid treatment did not work.

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REVIEW ARTICLE

An Updated Narrative Review on Dengue

ALAM A

Abstract

Dengue fever (DF) is a mosquito-borne viral illness that has spread rapidly throughout the world in recent years. Dengue virus is primarily transmitted by female mosquitoes (*Aedes aegypti*) species and also by (*Aedes Arbopictus*). Symptoms are usually flu-like but can progress to severe dengue haemorrhagic fever, a life-threatening condition. The incidence of DF has increased dramatically over the past few decades. The true number of dengue cases is underestimated because the vast majority of infected patients are asymptomatic or with mild and self-limited disease. Many patients were misdiagnosed to be other febrile illnesses. It is estimated that 2.5 billion people are at risk of having the disease, making dengue fever a major international public health concern. This review provides insights on dengue fever transmission, complications, treatment and impact on the healthcare system.

Keywords: DENV-(Dengue virus), DF (Dengue fever), DHF-(Dengue hemorrhagic fever), DSS(Dengue shock syndrome)

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Introduction:

Dengue fever has become an increasingly serious public health challenge in Bangladesh, with significant shifts in transmission patterns, clinical presentations, and the types of circulating virus strains.[1] Historically confined to urban areas like Dhaka, the disease has expanded rapidly into rural and peripheral regions.[2]

Dengue fever is acute arthropod-borne viral disease that is caused by four serotypes (DENV-1, 2, 3, 4). dengue viruses are transmitted by Aedes mosquitoes, mainly *Aedes aegypti* and less commonly by *A. albopictus*.[3] Its symptoms range from asymptomatic and flu-like mild illness to a potentially fatal hemorrhagic fever, dengue shock syndrome. DF is a global health challenge, and it is the most common arboviral infection worldwide. WHO estimates that the annual incidence of DF is 100 to 400 million infections, with about half of the world's population is at risk of having the disease.[4] Recent studies showed a significant increase in the number of DF cases in the last two decades, and many regions have suffered seasonal outbreaks. In Bangladesh, dengue cases and deaths increased by approximately five and six-fold respectively in 2023 compared to 2022.[4] This significant increase in incidences has placed a significant burden on the health systems of many countries, particularly those dealing with other health issues, such as the COVID-19 pandemic.[5] A recent study mentioned that the annual economic burden of dengue fever was almost U$ 1,384 million in Southeast Asia with a per capita cost up to $ 2.41.[6]

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Transmission:

The principal vector of dengue virus is Aedes Aegypti, that is widely distributed throughout the world. Other Aedes species such as *A.blbopitus* and *A.luciocephalus* can act as potential vectors.[7] The transmission of dengue virus and other mosquito borne diseases is sensitive to rainfall, temperature and humidity that favour the vector to develop the virus.[8] Mosquito bite can transmit all dengue serotypes but susceptibility of the vector to dengue virus varies geographically.[9] A non-vector transmission can occur as in blood transfusion and needlestick injuries.[10]

Life Cycle:

Primarily, the DENV was transmitted via sylvatic cycles in Asia and Africa by Aedes mosquito and the inhuman primates, with occasional appearances of mortal populations.[11] Still, currently, the global spread of DENV follows its emergence of all types of transmissions (e.g., sylvatic cycles and perpendicular mosquito to mosquito). Therefore, its primary life cycle entirely involves the transmission between Aedes mosquitoes and humans.[12] One report suggests that tykes or other creatures may act as incidental hosts and may serve as budgets of DENV infection.[13]

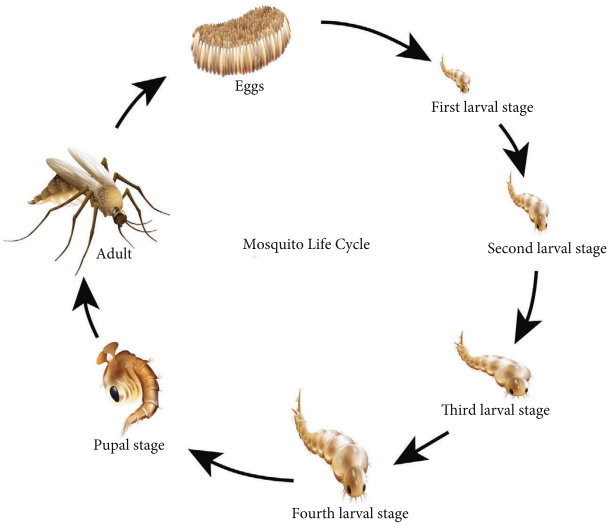
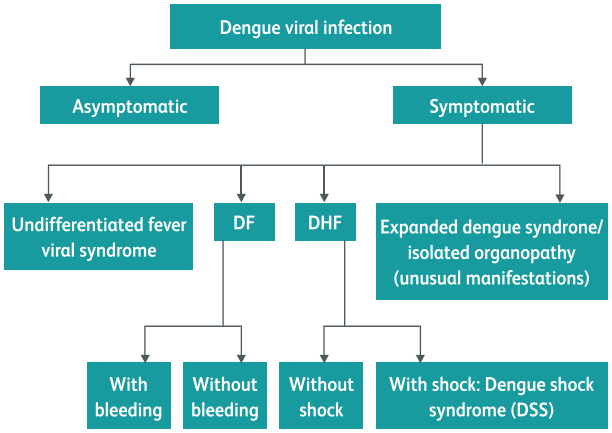


Figure: *Life cycles of mosquitoes*

Clinical manifestation: Dengue fever is characteristic or a symptomatic. Clinical complaint onsets 4- 6 days after pestilent mosquito bite.

Symptomatic vs Asymptomatic: (Characteristics)

Asymptomatic Infections itinerant cases with characteristic DENV infections have viremia situations that are plainly likely to render them contagious to mosquitoes.[14] Individualities who are asymptomatic with a DENV infection also have sensible situations of contagion circulating in the blood,[15,16] but the question remains open as to whether or not inapparent DENV infections have high enough viremias to be contagious. Because inapparent DENV infections are common,[17,18] it follows that they could play a part in the conservation of DENV in its natural transmission cycle, should their viremias be above the contagious threshold position.



Diagnosis:

The symptoms and signs of dengue fever alone make it very difficult to differentiate it from other febrile diseases, and detection is also difficult since early symptoms are ambiguous, viremia may go undetected, and serological testing reveals dengue late in the disease's progression.[8, 9] When plasma leakage and thrombocytopenia are found, this is a highly definitive diagnosis.[10] Disease can be ruled out if sign and symptoms appear 2 weeks after leaving an endemic area or if the fever continues for 2 weeks or more.

Enzyme-linked immunosorbent essay:

The benefits of this test include its high sensitivity and simplicity of use in identifying acute-phase (IgM) and recovery-phase (IgG) antibodies and antigens (Ag), and it is commonly used to diagnose. Production of IgM It differs. It may be detected from the 3 to5 days after symptoms appear, but it could also be undetectable until the eighth day of disease progression.[19] MAC-ELISA used for the qualitative detection of the virus antigen in the blood.[20] Its benefit is that it's used during epidemics since it has a quick detection of transmission progression, whereas in endemic areas a high number of clinical samples are examined.[21] IgG-ELISA is used to differentiate between primary and secondary dengue virus infections.[22] It is highly sensitive since it is performed in sero-epidemiological research.[23]

Reverse transcription-polymerase chain reaction (RT-PCR):

It is rapid, sensitive, and easy to use. Used to identify the genome in human tissue or mosquito also useful in quickly identifying novel serotypes in endemic areas.[24, 25] Several studies have found that RT-PCR is affected by the area of the genome chosen to be increased as well as the primers used to accomplish this purpose.[24] Capability of detecting the dengue serotype causing the continuing sickness and quick genomic categorization of dengue virus serotypes.[26]

Treatment:

Up till this moment, there is no prescribed curing therapy for DF that the patient can take to recover from the disease.

In severe cases, the patients may need to be hospitalized for supportive care, and for electrolyte replacement, the patient may need intravenous fluid, moreover, the blood pressure measurement is vital if the patient bleeds a blood transfusion is a must to avoid rapid blood pressure falls as well as the hypovolemic shock.[27]

The availability of four antigenically different dengue serotypes, each capable of evoking cross-reactive and disease-enhancing antibody responses against the remaining three serotypes, has made dengue vaccine development a problematic undertaking.[16] Prevention has always been better than cure, especially in developing and low-income countries with insufficient resources and shaky healthcare infrastructures.[28]

Symptomatic treatment:

Throughout the febrile period, lavish oral fluid administration is advised, as is antipyretic prophylaxis with paracetamol as needed.[17] The patient should avoid any other nonsteroidal anti-inflammatory drugs to avoid the risk of dengue fever bleeding complications.[17] It is very advised to monitor the patient's daily whole blood count if there is a health care hospital or clinic nearby. Severe exhaustion, early bleeding signs, and dehydration indications such as severe diarrhea and vomiting are all indicators that the patient should be admitted to the hospital for close monitoring and follow-up.[17]

Prevention:

In preventing dengue fever several issues, such as poor understanding of the pathogenic mechanisms of dengue fever, incapability to manage the vector population, absence of therapeutic intervention against the disease, and biological challenges in developing a vaccine, impede efforts to reduce the burden of dengue.[17] If an individual becomes a well-known case of dengue fever or knows someone who has been diagnosed with the disease, the patient should avoid mosquito bites during the first week because the virus will be spread in the patient's blood and will subsequently transmit the disease to other uninfected mosquitoes, increasing the percentage of infected individuals and potentially increasing hospitalization and the burden in the health care services.[4] To achieve effective dengue fever prevention, all community members must work together to combat mosquito vectors.[4] This can be achieved through the following actions: Furthermore, there is continuing research among many worldwide collaborators in pursuit of breakthrough tools and innovative techniques that will help global efforts to stop dengue transmission. WHO encourages the combination of vector management practices in order to establish long-term, successful locally tailored vector control programs.[4]

Discussion:

In Bangladesh, suggesting that the disease is evolving in terms of both its demographic impact and clinical presentation. These changes, particularly the shift toward older age groups and the increasing predominance of females, raise new concerns for public health management and warrant closer examination of the factors contributing to these trends.[26]

The probable source of the dengue outbreak has been determined to be stagnant water that serves as a breeding habitat for vectors. It is strongly advised to set up surveillance, an early reporting system, and implement protective measures against the vector.[29]

Fever, haemorrhagic fever, and dengue shock syndrome are all possible symptoms of dengue infection (DSS). The term "expanded dengue syndrome" (EDS), which has been reported more frequently, was created by the World Health Organization (WHO) to describe cases that do not fit into either DHF or DSS and have unusual manifestations in other organs such as the cardiovascular system, nervous system, kidneys, gut, and hematological system. Additionally, EDS is spreading throughout the world with unusual characteristics and a greater severity. There are more and more reports of uncommon, little-reported presentations with serious organ involvement. This study provides information about clinical presentation which aids in diagnosing dengue quickly and preventing additional outbreaks, especially during active epidemics.[30]

Conclusion:

The social and economic burden of mosquito- borne dengue infection is extensively alarming. The morbidity and mortality of dengue and other mosquito-borne viral infection can be reduced by performing early identification of high-risk patients and appropriate management for severe cases. New strategy for early dengue infection and severity risk prediction early in the course of illness is indispensable, so that management strategies can be promptly implemented.

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CASE REPORT

Primary Adenoid Cystic Carcinoma of the Lung: A Case Report of Rare Tumor

AWAL N[1], SULTANA S[2], AFROZ F[3], DEWAN MRK[4] , SHAILY AB[5]

Abstract

Adenoid cystic carcinoma (ACC) is predominantly a malignant neoplasm of the salivary glands but rarely can develop in the lungs as a primary tumor from bronchial glands, accounting for only 0.04%–0.2% of all pulmonary malignancies. Its slow growth, infiltrative nature, and nonspecific respiratory symptoms often mimic other conditions, creating considerable diagnostic and therapeutic challenges.

We report a case of a 50-year-old male radiotechnologist presented with recurrent hemoptysis and unintentional weight loss. Despite a normal chest X-ray, HRCT revealed a 4 × 3.1 cm soft tissue lesion completely obstructing the right principal bronchus with collapse of the right lower lobe. Pathological evaluation of bronchoscopic samples confirmed adenoid cystic carcinoma, necessitating a right lower bilobectomy. Subsequent histopathological examination revealed an intermediate-grade ACC with classic cribriform patterns, without lymphovascular and perineural invasion, and involvement of the middle lobe bronchial margin (stage pT1b pNx pMx).

Margin positivity raised concerns for potential recurrence, highlighting the need for meticulous follow-up and consideration of adjuvant therapy. This case emphasizes the importance of histopathological confirmation, margin assessment, and long-term surveillance in managing this rare pulmonary malignancy.

Keywords: Adenoid cystic carcinoma, Primary lung tumor, Endobronchial mass, Airway obstruction, Histopathology

Journal of Green Life Med. Col. 2025; 10(2): 62- 65

Introduction:

Adenoid cystic carcinoma (ACC) is predominantly a malignant neoplasm originating from the salivary glands but in rare cases, it may arise in the lungs-either as a primary tumor from the bronchial glands or as a metastasis from another site. This uncommon malignancy presents significant clinical challenges due to its atypical location, accounts for only about 0.04% to 0.2% of all lung malignancies.[1]

It arises from the submucosal seromucinous glands of the tracheobronchial tree, most often involving central airways.[2] Histologically, it resembles ACC of salivary glands, showing cribriform, tubular, and solid patterns with frequent perineural invasion. Notably, this carcinoma generally tends to grow along nerves (neurotropism), which leads to local spread and a high risk of recurrence. Although it can spread to other parts of the body, distant metastasis is rare.[3]

Patients frequently present with nonspecific symptoms such as cough, hemoptysis, or signs mimicking obstructive pneumonia, which can contribute to diagnostic delays.[4] The infiltrative nature of ACC renders surgical resection particularly challenging, and the treatment landscape remains largely undefined due to the rarity of the tumor and its unpredictable clinical course.

Here, we present a case of primary ACC of the lung in a middle-aged male, highlighting the clinicopathological features, diagnostic approach, and histopathological findings. The case is presented due to the tumor's unusual location, extreme rarity and potential for diagnostic delay.

Case report:

A 50-year-old male radio technologist from a low socioeconomic background presented with a 6-months

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history of recurrent hemoptysis and unintentional weight loss of approximately 2 kg. He had not experienced any shortness of breath, chest pain, cough, or fever. He was a nonsmoker but had a history of betel nut chewing and occasional alcohol intake. His family history was unremarkable. On examination, breath sounds were diminished over the right chest, with no supraclavicular lymphadenopathy; the remainder of the systemic examination was unremarkable.

The chest X-ray was normal, but the HRCT scan of the chest revealed a 4 × 3.1 cm soft-tissue lesion completely obliterating the lumen of the right principal bronchus and causing collapse of the right lower lobe. The remaining right lung parenchyma appeared normal. Bronchoscopy was performed, which revealed an endobronchial mass near the opening of the right upper lobe bronchus, causing complete luminal obstruction.

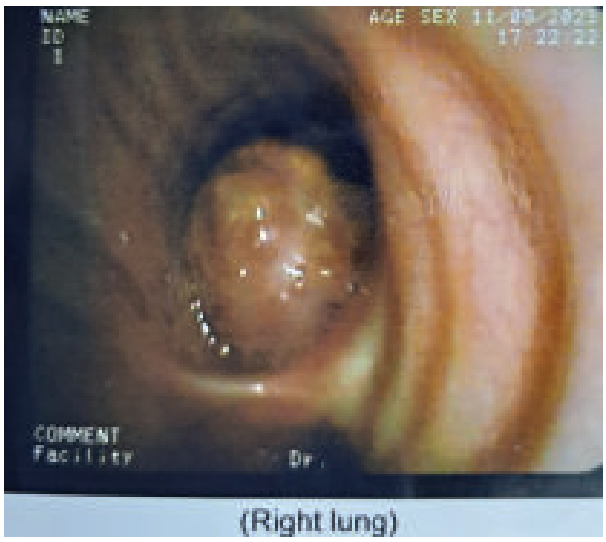

Fig: -1: *The bronchoscopy image shows a smooth, rounded endobronchial mass obstructing the lumen of the right bronchus.*

Pathological evaluation of bronchial washing (BAL), bronchial brushing, and bronchoscopic biopsy confirmed that the mass was malignant and favored adenoid cystic carcinoma. Subsequently, a right lower bilobectomy was performed.

The resected specimen included the middle and lower lobes of the right lung (14 × 7 × 5 cm). Gross examination of the middle lobe revealed an irregular solid gray-white mass measuring 2 × 1.8 cm, situated near the bronchial resection margin and 0.3 cm from the pleural surface. The rest of the middle and lower lobes showed dilated bronchi filled with fibrinopurulent exudate. Additional bronchial and endobronchial tissue appeared as multiple fragmented irregular gray-white pieces.

A histopathological examination with hematoxylin and eosin staining revealed intermediate-grade ACC. The tumor cells arranged in nests, cords, and cribriform patterns, with concentric arrangement around gland-like lumina containing homogeneous eosinophilic material. Lymphovascular and perineural invasion were absent. Areas of tumor necrosis were present, along with tumor-associated atelectasis and obstructive pneumonitis. The bronchial resection margin of the middle lobe was involved by tumor, whereas the visceral pleura and lower lobe bronchial margin were free of invasion. Additional lung parenchyma showed bronchiectasis but was uninvolved by tumor. Endobronchial tissue also demonstrated ACC with focal necrosis. The pathological staging was pT1bpNxpMx. All other investigations were normal. The patient was referred to oncology for further management.

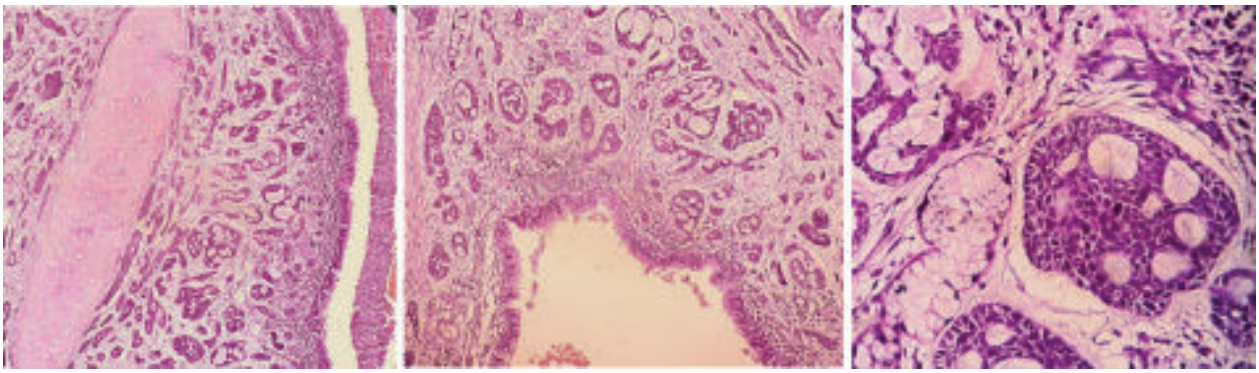

Fig:-2: Shows Intermediate-grade adenoid cystic carcinoma with cribriform growth patterns.

Discussion:

The patient's occupation as a radio technologist raises concerns about potential occupational exposures to ionizing radiation. Although he was a nonsmoker, his history of betel nut use and occasional alcohol intake may contribute to a multifactorial risk profile for lung tumors, although the specific etiological association with ACC is less well-defined in the literature.

The typical clinical presentation of ACC in the lung is often subtle, which can lead to delayed diagnosis. Patients typically report nonspecific symptoms such as cough, hemoptysis, or features of airway obstruction. In this case, the presentation was limited to recurrent hemoptysis without associated respiratory symptoms such as cough, dyspnea, or fever, making the initial diagnosis challenging.

Radiological imaging played a critical role in evaluation. While the chest X-ray was normal, HRCT revealed a soft-tissue density lesion obstructing the right principal bronchus, leading to further investigation. Bronchoscopy played a vital role in visualizing the endobronchial mass and obtaining tissue samples for pathological examination. The pathological examination of bronchial washing, brushing, and biopsy samples confirmed the diagnosis of adenoid cystic carcinoma, guiding the subsequent treatment plan.

Histologically, ACC is characterized by three architectural patterns—cribriform, tubular, and solid. The cribriform pattern is most common and generally associated with less aggressive behavior, whereas the solid subtype tends to be linked with higher-grade behavior and poorer outcomes.[4] In our case, the tumor exhibited intermediate-grade ACC featuring classic nests, cords, and cribriform arrangements, with eosinophilic luminal material, along with tumor necrosis and associated obstructive changes—aligning well with classic descriptions.

Surgical resection is the mainstay of treatment for localized pulmonary ACC, with reported 5-year survival rates of 85–91.7% in completely resected cases, compared to 0–33% in unresectable disease.[5] Margin status is a key prognostic factor, tumors with positive margins significantly increase recurrence risk. In this case, involvement of the bronchial margin highlights the need for close follow-up and consideration of adjuvant radiotherapy.

Pathological staging provides crucial prognostic and therapeutic information in pulmonary malignancies, including rare tumors such as adenoid cystic carcinoma (ACC). According to the 8th edition of the AJCC/UICC TNM classification for lung cancer, the tumor was staged as **pT1b pNx pMx,** indicating a tumor <2 cm confined to the lung without visceral pleural invasion.[6] This staging correlated with the findings in the resected middle lobe specimen.

The nodal status (pNx) could not be assessed in this case. Although lymph node involvement is less common in pulmonary adenoid cystic carcinoma (ACC) compared to other primary lung cancers, but its presence is associated with poorer outcomes. Thus, the absence of nodal sampling remains a limitation in staging accuracy.

The metastatic status (pMx) indicates that distant spread was indeterminate. Pulmonary ACC typically shows slow local progression with submucosal and perineural spread, while distant metastases to lung, brain, bone, or liver may occur at later stages.

Importantly, in ACC, conventional TNM staging does not always fully reflect prognosis. Margin status and growth pattern often have greater prognostic significance than tumor size alone.

In this case, despite the small tumor (T1b), the positive bronchial margin is a significant adverse feature, associated with higher risk of local recurrence. This highlights the need for long-term surveillance and consideration of adjuvant therapy in cases of incomplete resection.

From a pathogenetic standpoint, ACC is often driven by the MYB–NFIB gene fusion, a characteristic oncogenic event found in many cases. This genetic alteration is believed to drive tumorigenesis by upregulating MYB target genes involved in cell cycle progression, apoptosis inhibition, and angiogenesis.

Conclusion:

In summary, this case highlights the diagnostic challenge of primary pulmonary ACC due to its rarity, indolent presentation, and predilection for central airway location. Histopathological examination remains the gold standard for diagnosis, and complete surgical excision offers the best chance for long-term disease control. Given the potential for late relapse, extended follow-up is essential, even in early-stage disease.

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Continuing Medical Education (CME)

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