ISSN 2313-4941

Volume 2 Number 2 July 2014

The Journal of
Ad-din women's medical college

ISSN 2313-4941

Volume 2 Number 2 July 2014

The Journal of
Ad-din women's medical college

Ad-din
women's medical college

2 Bara Moghbazar, Dhaka-1217, Phone : +880-2-9362921, 9362926
Fax : 8317307, E-mail : awmc@ad-din.org, Website : www.ad-din.org

The Journal of Ad-din women's medical college

Volume 2, Number 2, July 2014

Published by : **Prof. Dr. Abu Ahmed Asraf Ali**
Principal, Ad-din Women's Medical College
2 Bara Moghbazar, Dhaka-1217, Phone : +880-2-9362921, 9362926
Fax : 8317307, E-mail : awmc@ad-din.org, Website : www.ad-din.org

Printed by : **Ad-din Printers**
Dhaka Road, Sheikhhati, Jessore, Bangladesh

ISSN : 2313-4941

Information for the Authors

Submission of manuscripts

Papers are accepted for publication with an understanding that they are submitted to solely to the journal of Ad-din Women's Medical College and are subject to peer review and editorial revision. Statement and opinion expressed in the papers, communications letter herein are those of author and not necessarily of the editor or publisher. Three hard copies along with a soft copy should be sent to the executive editor, journal of Ad-din Women's Medical College, 2 Bara Moghbazar, Dhaka-1217

Form of full papers submitted for publication

Full paper should be not more than 4000 words long. Type or print on only one side of the paper with wide margins of at least 2 cm and using double space throughout, the preferred font being Times New Romans size 12. Numbering of the pages should be consecutively, beginning with the title page number to be given in the in the lower right hand corner of each page. Each component of the manuscript should begin on a new page in the sequence of title page, abstract, text, reference, tables and legends for illustration.

Title page

Should include the title of the paper which should be concise but informative, name of the author(s) with highest academic degree(s) and institutional affiliation, name of the departments to which the work should be attributed, disclaimers, if any; name and address of author responsible for correspondence about the manuscript.

Abstract

Should be in second page and should usually be not more than 150 words in unstructured abstracts or 250 words for structured abstract (original article).

The structured abstract should have the following sections :

(i) Objectives

(ii) Materials and methods

(iii) Place and period of work

(iv) Results

(v) Conclusion.

Below the abstract author should provide 3-10 key words.

Text

Should be presented in the form of –

Introduction

The purpose of the article the rationale for the study or observation should be summarized, only strict pertinent references to be given and data or conclusion from the work being reported not to be included.

Material and methods

In this section selection of the observational or experimental subject (patient or laboratory animals, including control) should be described clearly. The age, sex and other characteristics of the subjects should be identified. Identify the methods, apparatus, and procedure in sufficient detail to allow other worker to reproduce the result. Give references to establish methods, including statistical methods. Precisely identify all drugs and chemicals used, including generic name, dose and route of administration. Author submitting review manuscripts are advised to include a section describing the methods used for locating, selecting, extracting and synthesizing data.

Results

In result section, when data are summarized, specify the statistical methods used to analyze them. Results to be presented in a logical sequence in the text, table and illustration Tables should be numbered consecutively in the order of their first citation in the text, and supply a brief title for each.

Place explanatory matter in footnotes, not in the heading. Be sure that each table is cited in the text. Figure should be professionally drawn and photographed.

Tables

Type each table double spaced on a separate sheet. Do

not submit tables as photographs. Number tables consecutively in the order of first citation in the text and supply a brief title for each. Give each column a short or abbreviated heading. Place explanatory matter in footnote, not in the heading. If you collect data from another published or unpublished source obtain permission and acknowledge fully. The use of too many tables in relation to the length of text may produce difficulties in the layout of pages.

Discussion

Should emphasize the new and important aspect of the study and the conclusions that follow from them. Relate the observations to other relevant studies.

Conclusion

Should be linked with the goals of the study Recommendation when appropriate, may be included.

Acknowledgements

May go to the text, one or more statements may specify i) the contributions that need Acknowledging but do not justify authorship, such as general support by a departmental chair ii) Acknowledgements of technical help iii) Acknowledgements of financial and material support, which should specify the nature of the support.

References

Should be given in the text using Vancouver system. They should be numbered consecutively in the order in which they first appear in the text using superscript. If a reference is cited more than once the same number should be used each time. References cited in only in tables or figure legends should be numbered in accordance with the sequence from the last number used in the text and in the order of mention of the individual tables and figures in the text. At the end of the paper, on a page(s) separate from the text, references should be listed in numerical order. References to materials available on websites should include the full internet address and the date of the version cited.

Editorial action

Manuscripts are examined by editorial board and are sent to reviewers. All discussions to accept, review or refuse will be made by the editors. Rejected manuscript will not be returned to the authors. Proof correction by the author will be appreciated. No reprint will be provided.

The Journal of Ad-din women's medical college

Volume: 02, Number: 02, July 2014

CONTENTS

An official organ of Ad-din Women's Medical College

Editorial

Adulteration of food

— Bangladesh perspective

The food safety situation in Bangladesh is at an alarming stage due to adulteration of food with toxic chemicals harmful to health has reached an epidemic proportion in Bangladesh. The newspapers have dubbed it as the 'silent killer'.

According to World Health Organization and Food and Agricultural Organization, food is considered safe if there is reasonable certainty that no harm will result from its consumption. Food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life.

It is very difficult to find a sector of food industry which is free of adulteration. From raw vegetable and fruits to milk and milk products to fish, meat and processed food - every food item is contaminated. Almost every day in the newspapers, newer and newer methods of adulterating newer and newer types of foods are reported. Carbide, formalin, heavy metal, chemical, textile colors, artificial sweeteners, DDT, urea etc. are used rampantly for this purpose. Contamination of foods with toxic chemicals pose a serious threat to public health, especially in a country like Bangladesh due to the low level of education. Immediate effect of ingestion of such foods may be severe forms of diarrhoea (food poisoning) & in the long run, these chemicals in food adversely affect vital organs such as the liver and kidney resulting in organ failure and/or cancer and thus, untimely loss of life.

There is no database in the country for these, but the recent surge in liver and kidney failure patients in the hospitals is indicative of the deteriorating situation. In a recent study, it has been found that though people are aware about the health hazards, they are nevertheless buying and consuming these adulterated foods. Several explanations are made for this paradox; absence or unavailability of non-adulterated food, failure of the regulatory agency to test and screen out adulterated food, adulterated foods are attractive in appearance and costs less, cultural factors and food habits etc. There is no paucity of laws and regulations to contain adulteration of food in Bangladesh such as Bangladesh Standard Testing Institute (BSTI)

A group of health experts and green activists demanded that authorities control the use of pesticide in food production to protect public health. The research report which suggests that about ten percent of fruits collected from different part of Dhaka city had high percentage of formalin. About 61 samples of fruits including mangoes, apples, dates, banana, malta, guava, pineapple, cucumber and a number of others were brought to it for formalin test. Another recent research report on examining food items for presence of poisonous elements conducted by Food Security Research (FSR) suggests about that 40 percent of food items carries more than 3-20 percent higher DDT, Aldrin, Chlordane, Heptachlor and other poisonous elements than permissible level. Of them 35 percents of fruits and 50 percents of vegetables had the presence of pesticides, there are 13 samples of rice which had the excessive amount of arsenic and about five rice items had chromium. Unchecked use of pesticide in agriculture is posing a threat to public health. A section of unscrupulous traders use these chemicals in fruits to keep them fresh for long, which adversely affects human health.

Some of the chemicals have even been classified as carcinogens or cancer causing substances. The food industry has grown by leaps and bounds in the past two decades, but food regulation has hardly kept pace.

The issue of coordination of food safety activities is prime factor to combat adulteration and bring back to track the whole process.

The question of identification of level of adulteration needs laboratory test, detection of contents of mixture, legal authority to prosecute the sources of supply and production, and legal agency to take the lead in nabbing the offenders. In fact, the Ministry of Health and Family Welfare, Ministry of Food, Ministry of Agriculture, Local Government Division, Ministry of Fisheries and Livestock, Ministry of Commerce, Ministry of Industry and Ministry of Home Affairs and Ministry of Information can play a very important role in food safety issues. Besides, Civil Society Organizations and mass media can also contribute much to generate awareness and resist its repetitions.

Food and Drug Administration was established in the USA and Food Safety and Standard Authority started functioning in India with trained personnel with the capability of enforcement of law and understanding of its complications from scientific knowledge and background. Almost all countries around the world are concerned about the coordination of such complicated issues. The question of human rights, detection of offence accurately and also extent of punishments are great concerns with food adulteration.

Bangladesh Standard and Testing Institute were established in 1985, Consumer Right Act, 2009 was approved by the parliament with the functioning of a department under the guidance of a council headed by the commerce minister. In fact, there are arrangements to detect the defaulters with the laboratory test and enforce the existing laws to combat the menace but concerted efforts are inadequate.

"Crimes go unabated for lax of government watch" was the observation of a seminar recently held on the food safety in Bangladesh. The major point raised during the discussion was whether public are taking "food or poison". Comparable to international ones, there is very little activity at the ground level to monitor or detect adulterated foods in the market or punish the guilty.

Prof. Dr. Shireen Ayesha Siddiqua
Editor in Chief
The Journal of Ad-din women's medical college

Original Article

Thyroid disorders in systemic lupus erythematosus patients

Dr. Md.Ashraf-uz-zaman[1], Dr. Nasreen Sultana Lovely[2], Prof. Bilquis Ara Begum[3]

Abstract

Objective : Thyroid abnormalities appeared to be more frequent in SLE patients than in the general population. The objective of the study is to assess the thyroid function status and to identify thyroid status in SLE patients.

Methodology : Our study included 50 pediatric SLE patients from the General Medical Hospital, Dhaka from January 2014 to July, 2015. These patients were diagnosed by using the American College of Rheumatology (ACR) criteria, revised 1997, which contains four or more criteria at a time or serially. Disease activity of SLE patients was recorded by using systemic lupus erythematous disease activity index (SLEDAI).

Results : Among a total number of 50 SLE cases 82% were in euthyroid state, 8% had subclinical hypothyroidism, 6% had hypothyroidism and 4% patients had euthyroid sick syndrome. Among thyroid antibodies, anti-thyroid peroxidase (Anti-TPO) antibody was positive in 48% of SLE cases and anti-thyroglobulin (Anti-TG) antibody was positive in 32% patients. Thyroid disorder was present in18% of SLE cases and all of them had positive anti-TPO antibody.

Conclusion : Thyroid disorders and presence of thyroid auto-antibodies are common in SLE patients and assessment of thyroid function in SLE patients as a part of biochemical and immunological profiles may help in early detection of associated thyroid disorders.

Key Words : Systemic lupus erythematosus(SLE), Thyroid disorder

Introduction

Systemic lupus erythematosus (SLE) is a chronic autoimmune disease characterized by multisystem inflammation and presence of circulating auto-antibodies directed against self antigens leading to inflammatory damage of many target organs including the skin, joints, kidney, blood-forming cells, blood vessels and the central nervous system. SLE in children is generally more acute and severe and more widespread organ involvement than in adults[1]. Approximately 15 to 20 % of SLE cases begin before the age of 19 years.[2] The incidence of lupus is not known but varies by location & ethnicity. Lupus is characterized by production of auto-antibodies and polyclonal activation of B-lymphocytes that result in elevated immunoglobulin levels which also contribute to elevation of autoantibody level. Polyclonal activation by nonspecific response to antigenic stimuli such as viral agents or following loss of either B-cell immune tolerance to self-antigens or suppressor T-cell function may produce autoantibody. Other mechanisms like defect in macrophage phagocytosis and production of immune complexes have also been described.[3] Various antibodies are found in SLE like ANA, anti-ds DNA, anti- Ro, anti-La, anti-Sm, anti-phospholipids antibody and others. The association between systemic lupus erythematosus (SLE) and thyroid abnormalities was first described in 1961 and showed that the presence of thyroid disturbance appeared to be more frequent in SLE patients than in the general population.[4] A study by Weetmen and Walport5 has shown that 51% of SLE patients had thyroid antibodies compared to 27% of controls and elevated TSH were detected in 25% of SLE patients and 12.5% in the control group. Anti-thyroid antibodies were more

1. Professor (CC), Dept of Biochemistry, Ad-din women's medical college, moghbazar, .
2. Associate Professor, Dept of Biochemistry, Ad-din women's medical college, moghbazar,
3. Professor and Head, Dept of Biochemistry, Ad-din women's medical college, moghbazar,

Correspondence : Dr. Md. Ashraf-uz-zaman

E mail : apuzaman@gmail.com

frequent in SLE.[6] The autoimmune process is believed to begin with activation of CD4+T-helper lymphocytes specific for thyroid antigens. Activated CD4+T lymphocytes recruit cytotoxic (CD8+) T cells as well as B cells into the thyroid gland. Thyroid cell destruction occurs through multiple mechanisms: cytotoxic T cells that induce apoptosis; cytotoxic antibodies that fix complement and cause thyroid cell lysis and antibody-dependent cell-mediated cytotoxicity (ADCC) involving natural killer cells. Subclinical hypothyroidism (SCH) is associated with a pro-atherogenic dyslipidemia and increased risk of cardiovascular disease.[7] These effects are being greater at higher TSH levels.[8]

Results

Table 1: ACR Criteria of SLE patients (n=50)

Criteria	Number of patients	Percentage (%)
Malar rash	8	16
Non-specific rash	37	74
Arthritis Arthralgia	23 18	46
Serositis Ascites Effusion	 9 3	 36 6
Oral ulcer	21	42
Photosensitivity Neurological criteria Headache Convulsion	20 8 3	40 16 6
Anemia Mild(8-10gm/dl) Moderate(6-gm/dl) Severe <6gm/dl)	 22 21 4	 44 42 8
Leucopenia(<4000/cmm)	3	6
Thrombocytopenia (<100000/cmm)	2	4
Renal criteria RBC> 5 / HPF (hematuria)	26	52
Urinary total protein (UTP) (>0.5 gm/day)		
ANA positivity	49	98
Anti-dsDNA positive	44	88

Methodology

This cross sectional analytic study was done at General Medical Hospital Dhaka from January 2014 to July 2015. A total 50 SLE patients who attended at hospital were included purposively. Data was collected through face to face interview. Relevant clinical examination was done and evaluation included some laboratory investigations. These patients were diagnosed by using the American College of Rheumatology (ACR) criteria, 1997 (revised) which contains four or more criteria at a time or serially. Disease activity of SLE patients was recorded by using systemic lupus erythematous disease activity index (SLEDAI).[9] SLEDAI contains different parameters of disease. The serum was used for detection of thyroid hormone and auto antibodies. Total Tri-iodo thyronine (T3) was measured by radio- immunoassay kit (PR) IMK- 422 imported from department of Isotope, China Institute of atomic Energy, Beijing. Total thyroxine (T4) was measured by radioimmunoassay kit (PR) IMK-419 imported from Beijing Atom Hightech Co. Ltd, Beijing. TSH was measured by immune radiometric assay kit IMK-432 imported from Beijing Atom Hightech Co. Ltd, Beijing. Thyroid peroxidase (TPO) was measured by I-TPOAb radio immuno assay (RIA) kit IMK-417. Thyroglobulin (anti-TG) was measured by radioimmunoassay (RIA) Kit-476. Thyroid function of all the patients were done in the same laboratory and in the same set up. After editing, the coded data were directly entered into the computer by using SPSS software for window version 18.

Table 2 : Laboratory Parameters (n=50)

Parameters	Mean(SD)
T3 (ng/ml)	1.3 ±0.58
T4 (ng/ml)	83.9±26.4
TSH (mlU/L)	4.2± 2.4
TPO Antibody (U/ml)	47.1±114.8
TG Antibody (%)	22.0±24.9

Table 3 : Thyroid Disorders among SLE Patients (n=50)

Thyroid Disorders	Number of patients	Percentage
Hypothyroidism	3	6
Subclinical Hypothyroidism	4	8
Euthyroid Sick Syndrome	2	4
Euthyroid	41	82

Table 4 : Sex Distribution of SLE Patients (n=50)

Parameter	Number	Percentage (%)	Male/ female ratio
Male	12	24	3:1
Female	38	76	

Discussion

Systemic lupus erythematous (SLE) is a chronic autoimmune disease characterized by multisystem inflammation and presence of circulating auto-antibodies directed against self-antigens leading to inflammatory damage of many target organs including the skin, joints, kidney, blood-forming cells, blood vessels and the central nervous system. Among the 50 cases of SLE enrolled in this study, 38 were female and 12 were male, male: female ratio was 3:1. It is well established that females are more affected than male.[1]

Table 5 : Laboratory Data in Relation to Thyroid function (n=50).

Laboratory Data	SLE with Euthyroid function (n=41)	SLE with Hypothyroidism (n=3)	SLE with Subclinical Hypothyroidism (n=6)	P value
SLEDAI Score Mean (SD)	16.9±7.6	20.0±7.5	19.8±6.7	0.265
T3 (ng/ml) Mean (SD)	1.4 ±0.6	0.8 ±0.2	1.27±0.5	0.360
T4 (ng/ml) Mean (SD)	88.9±25.2	42.6±6.4	62.84±11.5	0.006
TSH (mIU/L) Mean (SD)	2.0 ±1.4	8.9±2.4	5.6±0.3	0.001
Anti-TPO (U/ml) Mean (SD	34.4±99.7	262.5±199.3	21.4±7.2	0.006
Anti TG(%) Mean (SD)	18.2±23.3	121.9±23.3	14.9±26.9	0.008

Autoimmune thyroid disease is marked by the presence of auto-antibodies directed against thyroid antigens, has been associated with a number of non-organ specific rheumatic disorders.[10,11]

In this study it was found that 6% SLE cases had hypothyroidism which is comparable to Miller et al.[12] where hypothyroidism was found to be as 6.6%, and Pyne and Ienberg [13] where it was found to be as 5.7% but higher than Kakehasi et al.[4] where it was found to be as 4% and less than Tsai et al.[10] where it was found to be as 8.8%, Park et al.[11] study where it was found to be 9.5% and Weetman and Walport[5] study where it was found to be as 24%. This variation of hypothyroidism may also be related to ethnic background of patients, sample size and the sensitivity of Enzyme linked Immunosorbent Assay (ELISA) used to detect TSH level.

Subclinical hypothyroidism was found in 8% SLE patients which is comparable to 10% by Kakehasi et al.[4] 10% by El-Sharif et al.[14] but higher than Park et al.[11] study where sub clinical hypothyroidism was found to be in 1.6% among Korean adult SLE patients. However it was less than 39%, 13.7% and 12% by Miller et al.[12] Pyne et al. reported that the prevalence of subclinical hypothyroidism was more than hypothyroid cases and which is similar to our study where hypothyroidism was 6% and subclinical hypothyroidism was 8% among SLE patients. All the SLE cases with hypothyroidism and subclinical hypothyroidism had positive anti-TPO antibody in their plasma.

In this study 4% of the SLE patients had euthyroid sick syndrome but none of them were positive for thyroid antibodies. In contrast to our study, Al-Awaddhi et al[15] and Kumar et al[16] found higher frequencies of euthyroid sick syndrome among SLE patients. In this study, hyperthyroidism was not detected in anyone among the SLE patients as well as among the reference groups. Some studies suggested that there was no increase in prevalence of hyperthyroidism in SLE patients.[12]

Euthyroid sick syndrome was found to be in 4% of SLE study population, which is much lower 1% reported by Kakehasi et al[4].

Mean value of anti-TPO and ant-TG antibody level were significantly higher in hypothyroid cases than euthyroid cases but low in subclinical hypothyroid cases than euthyroid case. It may be mentioned here that any hyperthyroidism was not found among the present studied SLE patients like Tsai et al[10] & El-Ghoneimy et al.[17]

Conclusion

Present study demonstrated that thyroid disorders were detected in SLE patients. Most of the patients with thyroid disorders had positive anti-thyroid antibodies. Hypothyroidism and subclinical hypothyroidism was found in 6% and 8% of SLE patients respectively. So, from this small study it may be concluded that thyroid disorders are common in SLE patients and as a part of biochemical and immunological profiles may help in early detection of associated thyroid disorders.

Reference

1. Ardoin, SP and Schanberg, LE 'Systemic lupus erythematosus', in Kliegman, RM, Stanton, BF, St. Geme, JW, Schor, NFand Behrman, RE (eds), Nelson Textbook of Pediatrics, Saunders Elsevier, Philadelphia, 2012; 841-846.
2. Silverman, E and Eddy, A 'systemic lupus erythematosus', in Cassidy, JM, Petty, RE, Laxer, RM and Lindaley, CB (eds), Textbook of pediatric Rheumatology, Elsevier Saunders, Philadelphia, 2011;315-343.
3. Klein-Gitelman, MS and Jung, LK, 'Paediatric Systemic Lupus erythematosus' Retrived November 19,2013;from

http://emedicine.medscape. Com / article /1008066-overview.

4. Kakehasi, AM, Dias, VN, Duarte, JE, Lanna, CCD and Carvalho, MAP 'Thyroid abnormalities in systemic lupus erythematous: a study in 100 Brazilian patients', Rev Bras Reumatol, 2006; 46: 375-379.
5. Weetman, AP and Walport, MJ 'Association of autoimmune thyroiditis with systemic lupus erythromatosus', Br. J Rheumatol 1987;26: 359-61.
6. Porkodi, R, Ramesh, S, Mahesh, A, Kanakarani, P and Rajendran, C 'Thyroid function and auto-antibodies in Egyptian patient with systemic lupus erythematosus and rheumatoid arthritis', J. Indian Rheumatol Assoc, 2004;12: 88-92.
7. Chu, JW and Crapo, LM, 'Should mild subclinical hypothyroidism be treated?' Am J Med, 2002; 112: 422-3.
8. Kahaly, GJ 'Cardiovascular and atherogenic aspects of subclinical hypothyroidism', Thyroid, vol. 2000;10: 665-79.
9. Bombardier, C, Glandmann, DD and Turoitz, MB 'Derivation of the SLEDAI: A disease activity index of lupus patients', Artho Rheum, 1992; 35:360.
10. Tsai, RT, Chang, TC, Wang, CR, Chuang, CY and Chen, CY, 'Thyroid disorder in Chinese patients with systemic lupus erythematosus', Rheumatol Internatioanl, 1993;13: 9-13.
11. Park, DJ, Cho, CS, Lee, SH, Park, SH and Kim, HY. 'Thyroid disorder in Korean patients with systemic lupus erythematosus', Scan J. Rheumatol, 1995; 24: 13-17.
12. Miller, FW, Moore, GF, Weintraub, BD and Steinberg, AD 'Prevalence of thyroid disease and abnormal thyroid function test results in patients with systemic lupus erythematosus', Arthritis Rheumatism, 1987;30:1124-1131.
13. Pyne, D and Ienberg, DA 'Autoimmune thyroid disease in systemic lupus erythematosus', Ann Rheum Dis, 2002;1: 70-2.
14. El-Sherif, WT, El-Gendi, SS, Ashmawy, MM, Ahmed, HM and Salma, MM 'Thyroid disorder and auto-antibodies in systemic lupus erythematosus and rheumatoid arthritis', Egypt J Immunol, 2004;11: 81-90.
15. Al-Awadhi, AM, Olusi, S, Hasan, EA and Abdullah, A 'Frequency of abnormal thyroid function in Kuwaiti Arabs autoimmune disease', Medicine principal practice, 2008;17:61-65.
16. Kumar, A 'Indian guidelines on the management of SLE', J Indian Rheumatol Assoc, 2002;10:80-96.
17. El- Ghoneimy, DH, Awad, KS, Soliman, AD, and El-wahab, RMA 'Subclinical hypothyroidism among Egyptian children with systemic lupus erythematosus', Egypt J Pediatr Allergy Immunol, 2011; 9(2): 87-92.

Original article

Association between kidney dysfunction and stroke in different age groups

Sharmin Jahan[1], Rokeya Begum[2], Qazi Shamima Akhter[3], Nasreen Sultana[4], Khadiza Begum[5]

Abstract

Objective : Stroke is one of the commonest causes of severe disability and accounts for a large proportion of health care resources. Kidney functions are related to cerebrovascular disorders and it also predicts survival in patients with stroke. The present study has been designed to assess the relationship between stroke and kidney dysfunction.

Methods : This case control study was conducted in the Department of Physiology, Dhaka Medical College and Hospital (DMCH), Dhaka from 1st July 2010 to 30th June 2011. A total of 200 subjects were included with the age range of 35–85 years. Out of them 100 apparently healthy subjects were selected as control (Group A) for comparison and 100 diagnosed stroke patients were selected as study group (Group B). On the basis of age, group A and group B were further subdivided into group A1(age 35-59 years) consisting of 47 normal persons and group A2(age 60-85 years) consisting of 53 normal person, group B1(age35-59 years) was consisting of 42 stroke patients and group B2(60-85 years) consisting of 58 stroke patients. The study subjects were selected from admitted patients in Department of Medicine, DMCH, Dhaka. The study parameters were serum urea, serum creatinine and Estimated GFR (eGFR).

Results : The result was expressed as Mean (+SD). The test of significance was calculated and p values <0.05 was accepted as level of significance. The mean (±SD) of serum urea, serum creatinine levels were significantly higher ($p<0.001$) and mean(±SD) eGFR level was significantly ($p<0.001$) lower in group B1 and B2 than that of group A1 and A2 respectively.

Conclusion : From this study it can be concluded that, stroke patients of advanced age group suffers from kidney dysfunction than that of normal control group.

Key words : Serum urea, serum creatinine, eGFR, stroke, kidney dysfunction.

Introduction

Stroke is an important health issue for individual and society. According to World Health Organization (WHO), stroke is a clinical syndrome occurring due to sudden cerebral dysfunction producing focal neurological deficit persisting more than 24 hours or the patient die within 24 hours, which is vascular in origin, non-epileptic and non traumatic in nature. In the developed countries, after heart disease and cancer, stroke is the third leading cause of death and it causes serious long term disability. Each year about 4.4 million people die of stroke globally, of whom three millions are from developing countries[1]. The major risk factors for stroke are hypertension, smoking, diabetes mellitus, hyper lipedemia etc. The other risk factors are high alcohol intake, positive family history, oral contraceptives etc. Recent evidence suggest that, cerebral small vessel disease is closely associated with kidney function in patients with acute stroke and reduced kidney function may predict poor post stroke survival.[2] Presence of CKD (Chronic kidney disease) in various forms and even at mild stages is associated with cerebrovascular disease[19]. Kidney dysfunction is characterized by glomerular endothelial abnormality and lipohyalinosis; both of which are features of small vessel disease of the kidney. White matter lesions (WML), lacunar infracts and subcortical atrophy are markers of cerebral small vessel disease that increases the risk of stroke, cognitive decline and dementia[3]. Because of the hemodynamic similarities between the vascular beds of the kidney and the brain, small vessel disease in the kidney may be indicative of presence of small vessel disease in the brain[4] This relationship is also due to the fact that the blood vessels of both the kidney and the brain have low resistance and are therefore highly susceptible to fluctuations in blood pressure and flow. kidney disease is an important independent risk factor for cerebrovascular disease, Even mild level of kidney dysfunction is associated with white mater abnormalities,

1. Assistant Professor, Department of Physiology, Shaheed Monsur Ali Medical College, Uttara, Dhaka.
2. Professor and Head of the department of Physiology, Anwar Khan Modern Medical College, Dhaka.
3. Professor and Head of the department of Physiology, Dhaka Medical College, Dhaka
4. Associate Professor, Department of Physiology, Ad-Din Women's Medical College
5. Assistant Professor, Physiology, Bashundhara Ad-Din Medical College

Correspondence: Sharmin Jahan, E-mail address: sjlubna@yahoo.com

Early recognition of chronic kidney disease and prevention of it's progression might prevent the development of white mater abnormalities.[5] Patients with silent brain infarction (SBI) should be considered a high risk population for decreased kidney function.[6]

Age is a profound long term predictor after stroke. Kidney dysfunction can occur due to small vessel disease in the kidney and in the elderly small vessel diseases are also present in the brain and that increase the risk of stroke[7]. Increased serum urea and serum creatinine level have increased risk of cerebrovascular disease.[8] The high serum urea & creatinine level is a marker of increased risk of cerebrovascular disease[13-14].

Glomerular filtration rate is an important clinical indicator of kidney function. The GFR assess the excretory function of the kidneys and is considered the gold standard to evaluate the renal function.[9] An eGFR,<60ml/min/1.73m2 body surface area represents loss of half or more the adult level of normal kidney function and is associated with an increased complication[10].

Low eGFR is a strong independent predictor of mortality and poor outcome in patient with acute stroke[11]. Among patients with acute ischemic stroke a reduced or highly elevated eGFR at hospital admission is associated a higher mortality rate compared to patients with moderate levels of eGFR[12].

Methods

The present cross sectional study was carried out in the department of Physiology, DMCH, Dhaka from July 2010 to June 2011. In this study, a total number of 200 subjects were included where 100 apparently healthy subjects were selected as control (Group A) and 100 diagnosed acute stroke patients (both ischemic and haemorrhagic type) were selected as study group(Group B). On the basis of age group A and group B were further subdivided as follows-

Group A1: Control, age 35 60 years 47 persons

Group A2: Control, age 61 85 years 53 persons

Group B1: Case, age 35 60 years 42 persons

Group B2: Case, age 61 85 years 58 persons

All the patients were selected from the Medicine department of DMCH. Patients with the history of kidney disease, coma, convulsion or any other chronic illness were excluded from this study.

Written informed consent was taken from all participants. Study protocol was approved by Ethical review committee of Dhaka Medical College, Dhaka. Detailed medical and family history was recorded in a prefixed questionnaire. Under aseptic precaution 5 ml of venous blood was collected and serum was prepared for estimation of serum urea, serum creatinine. The serum creatinine was measured (for measurement of eGFR) by Dimension ® clinical chemistry system at the department of physiology Dhaka Medical College, Dhaka. The eGFR was calculated by MDRD study equation [eGFR (ml/min/ 1.73m2=186xserum creatinine (mg/dl)-1.154 x age-0.203 x 0.742 (if female) x1.212 x1.212 (if black)

Statistical analysis of data was done by SPSS program version-12. All the data were expressed as Mean ± SD (Standard deviation) of both study and control groups. Comparison between two groups were done by using unpaired student't' test. The test of significance was calculated and p values <0.05 was accepted as level of significance.

Results

The mean serum urea and serum creatinine level in group B1 & B2 were higher than that of group A1 & A2 and the difference were statistically highly significant($p<0.001$). Within the study group the serum urea and serum creatinine level in group B2 were higher than that of group B1.(Table II&III and)The mean eGFR in group B1 & B2 were lower than that of group A1 & A2 and the differences were statistically highly significant ($p<0.001$).The mean eGFR in group B1 & B2 were higher than that of group A2 and the differences were statistically highly significant($p<0.001$). Within the study group the eGFR in group B2 was lower than that of group B1 but the difference was statistically significant. The mean eGFR level of group B2 was statistically highly significant <0.001) than Group A1 and A2 (Table IV).

Fig-1 Mean (±SD) age (years) in different groups (n=200)

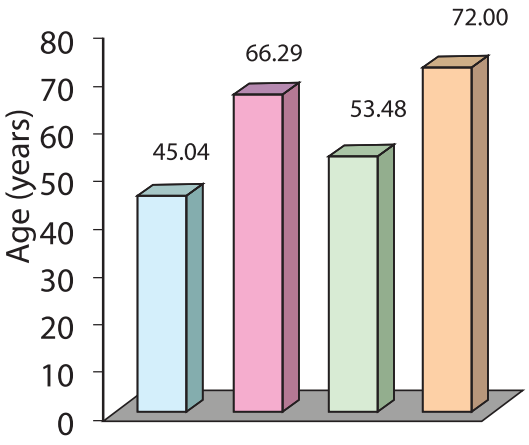


Table – I

Serum urea (mg/dl) in different groups (n=200)

Groups	n	Mean±SD
A1	47	17.57±9.40
A2	53	21.70±11.41
B1	42	48.74±27.06
B2	58	58.14±23.66

Statistical analysis

Groups	t	df	p value
A1 vs A2	1.958	98	0.053ns
A1 vs B1	7.416	87	0.0001***
A1 vs B2	11.061	103	0.0001***
A2 vs B1	6.581	53	0.0001***
A2 vs B2	10.181	109	0.0001***
B1 vs B2	1.846	98	0.068ns

Significant at P<0.001

Table II

Serum creatinine (mg/dl) in different groups (n=200)

Groups	n	Mean±SD
A1	47	0.76±0.12
A2	53	0.77±0.07
B1	42	1.48±0.85
B	58	1.72±0.71

Statistical analysis

Groups	t	df	p value
A1 vs A2	0.338	98	0.736ns
A1 vs B1	5.810	87	0.0001***
A1 vs B2	9.101	103	0.0001***
A2 vs B1	6.158	93	0.0001***
A2 vs B2	9.666	109	0.0001***
B1 vs B2	1.498	98	0.137ns

Significant at P<0.001

Table: III

eGFR (ml/min/1.73 m2) in different groups (n=200)

Groups	n	Mean ± SD
A1	47	107.82±20.55
A2	53	97.47±9.62
B1	42	61.43±29.91
B2	58	45.96±16.26

Statistical analysis

Groups	t	df	p value
A1 vs A2	3.286	98	0.001**
A1 vs B1	8.60	87	0.0001***
A1 vs B2	17.226	103	0.0001***
A2 vs B1	8.258	93	0.0001***
A2 vs B2	20.073	109	0.0001***
B1 vs B2	3.323	98	0.001**

Significant at P<0.001

Discussion

This study has been undertaken to observe the association between renal dysfunction in stroke patients of different age group. The renal function tests include serum urea, serum creatinine and eGFR .

The present study indicates that, the incidence of stroke increased with increasing age. Similar observations were obtained by Ronald et al 2002[16]. They suggested that age is a profound long term predictor of death after stroke. Ikram et al 2008[4] found that poor kidney function is highly prevalent in general elderly population. It often remains subclinical and can be measured by decreasing glomerular fitration rate. Small vessel disease can also cause kidney dysfunction in the elderly population. It increases the risk of stroke due to haemodynamic similarities between vascular bed of kidney and brain.

In this study, serum urea levels were significantly higher (p<0.001) in stroke patients than control groups. Among the stroke patients mean (±SD) serum urea level was higher in group B2 than that of group B1 .These findings are in agreement with other findings[18]. They observed that, increase serum urea reflect a state of renal hypoperfusion from hypovolumia in stroke patient. The high serum urea is a marker of cerebral dysfunction.[13]

The serum creatinine levels were also significantly higher (p<0.001) in stroke patients than control groups .Among the stroke patients mean (±SD)serum creatinine level was higher in group B2 than that of group B1 .These findings are in consistent with Some other the findings[15,16,18] . The increased serum creatinine level is a marker of increased risk of cerebrovascular disease.[14]

The mean eGFR of group B2 was statistically highly significant(p<0.001) than group A1 and A2. Whitin the study group the eGFR in B2 was lower than that of group B1 but the difference was statistically significant .These findings are similar with other studies[17,19,20].

The relationship between kidney function and stroke may be shared risk factors underlying vascular disease including age, diabetes mellitus, hypertension, left ventricular hypertrophy and low density lipoprotein cholesterol.[15] The vascular beds of both the kidney and brain have very low resistance and are passively perfused

at high flow through systole and diastole. Because of these unique features which are not present in other organs, the blood vessels in the kidney and the brain are highly susceptible to fluctuation in blood pressure and flow.[16]

In the elderly, small vessel diseases are present in both brain and kidney. So, stroke patients of advanced age group suffer more in kidney dysfunction than the younger age group.

Conclusion

From this study, it may be concluded that, kidney dysfunction is more prone in stroke patients of advanced age group.

References

1. Mc Clellan W, Warnock DG, Mc Clure L. Racial Differences in the prevalence of Chronic Kidney disease among participants in the reasons for geographic and racial differences in Stroke. J Intern Med. 2001; 97(5): 293-296.
2. Oksala NK, Salonen T, Standberg T, Oksala A. Cerebral small vessel Disease predict long term survival in stroke patients. Stroke; 2010;41(9):1914-1920.
3. Buchman A, Tanne D, Boyle PA. Kidney function is associated with the rate of cognitive decline in the elderly. Neurology 2009;73(2):920-927.
4. Ikram MA, Vernooji MW, Hofman A. Kidney function is related to cerebral small vessel disease. Stroke 2008; 39(1): 55-61.
5. Minesh K, Clinton BW, Thomas LN. Chronic kidney diseases is associated with white matter hyperintensity volume. Stroke 2007;38(5): 3121-3126.
6. Mayumi K, Nobuhito H, Satoshi M. Silent brain infarction and rapid decline of kidney function in patients with CKD, Americal journal of kidney disease. 2010;56(3): 468-476.
7. Rule AD, Larson TS, Jacobsen SJ. Using serum creatinine to estimate glomerular filtration accuracy in good health and in chronic kidney disease. An intern Med.2004; 141(7):929-937.
8. Gilad Y, Roseline S, Maya T, David O. Chronic kidney disease and clinical outcome in patients with acute stroke. Stroke 2009; 40(5) 1296-1303.
9. Yalahom G, Merzeliak O, Toashi M. Low glomerular filtration rate and risk of stroke.2010; 314(45): 42-49.
10. Patrizia DF, Jean CL, Emmanuel C. Anaemia and chronic kidney diseases are potential risk facrors for mortality in stroke patient. BMC Nephrol 2010; 11(27):68-96.
11. Ruyun J, Jeremiah RB, Anthony PF. Estimation of glomerular filtration rate and renal function . The Annals of Thoracic Surgery. 2008;86(1):1-3.
12. Hao Z, Wu B,Tao WD, Lin S, Kong FY. Association between renal function and clinical outcome in patient with acute stroke. Eur Neurol 2010; 63(4):237-242.
13. Meng L, Bruce O, Reno-cerebrovascular disease: linking the nephron with neuron. Summary expert review of neurotherapeutics.2011; 11(2):241-249.
14. Niku KJ, Tapani S, Timo S, Anni O. Cerebral small vessel disease predicts long term survival in stroke patient. American Heart Association.2010; 41(2):97-115.
15. Adrian C, Adalbert S, Nicolete GM,Ligia P.The impact of acute kidney injury on short term survival in an eastern European population with stroke. Nephrol Dial Transplant. 2007; 23(5) 2228-2234.
16. Jing X, Weiming W, Hao S, Shengdi C.Chronic kidney disease is prevalent in Chinese patients admitted with verified cerebrovascular lesions and predicts short term prognosis. Ann Neurol. 1991;30(5) 725-730.
17. Ronald S, Mac W, Suzzane YS,Graham S. Does renal dysfunction predict mortality after acute stroke? Stroke 2002; 33(3): 1630-1635.
18. Mostfsky E, Welenius GA,Noheria A, Levitan EB. Renal function predicts survival in patients with acute stroke.Cerebrovascular Dis.2009;28(1):88-94.
19. George T,Theodore A, Maris A, Kimon S .Renal dysfunction in acute stroke:an independent predictor of long term all combined vascular events and overall mortality. Nephrol Dial Transplant 2009;24(8)194-200.
20. Meng L,Jeffery LS, Kuo-Hsuan C, Hung-Wei L, Shen-Chin C,Bruce O. Low Glomerular Filtration Rate and Risk of Stroke:Meta-analysis.BMJ 2010;314(5):42-49.
21. Menon V, Shilpak MG, Wang X, Coresh J,Greene T, Stevens l,Kusek JW, Beck GJ,Collins AJ,Levey AS,Sarnak MJ. Risk Factor for Outcome in Chronic kidney Disease.Ann Intern Med.2007;147(6):19-27.
22. Papazafiropoulou A, Sotriropoulos A, Skliros E, Kardara M, Kokolaki A,Pappas S. Predictors of in Hospital Mortality after Acute Ischemic Stroke in Subjects with or without Diabetis Mellitus. The open General and international Journal.2009;3(2):34-39.
23. Perrone RD, Madias NE,Levey AS. Serum Creatinine as an index of renal function;new insights in old concepts.Clinical Chemistry.1992;38(7):1933-1953.
24. Seliger SL, Longstretch WT.Lessons about brain vascular disease from another pulsating organ,the kidney.Stroke.2008;39(3);5-6.
25. Yahalom G, Schwartz R, Schwammenthal Y,Merzeliak O.Chronic Kidney Disease and Clinical outcome in Patients with acute Stroke.Stroke2009;40(8)1296-1303.

Original article

Variation of index (2D) and ring (4D) digit lengths and their ratio (2D:4D) among adult females of Bangladesh

Karim Rezwan Hasan[1], Shamim Ara[2], Rubaba Tajreen[3]

Abstract

Objective: In Human hand. by virtue of evolution and genetically arrangements, digital lengths vary from person to person according to age, sex, races, occupation or even environmental influences. It has been found that the digital lengths and their ratios are not the same in different sexes or even both hands. Specially, index to ring digit lengths and their ratios which already have been proved to represent sexual dimorphism may differ in both hands of an individual. In this study, this variation of the index finger (2D) and ring finger (4D) length and their ratio (2D:4D) has been analyzed and compared in both hands among the adult females of Bangladesh.

Materials & Methods: A Cross sectional analytical study was conducted in the department of Anatomy, Dhaka Medical College, Dhaka, from July 2012 to June 2013. The study was performed on 100 female MBBS students (20-25 years of age) of Dhaka Medical College, Dhaka. With the help of digital vernier caliper measurements of digital lengths were recorded. Paired t- test was done for statistical analysis of the results.

Results: There was no significant difference between the lengths of right (R2D) and left (L2D) index finger but the length of right ring finger (R4D) was significantly greater ($P<0.001$) than left ring finger (L4D). The right index to ring digit ratio (R2D:4D) was significantly less than left index to ring digit ratio (L2D:4D) in female ($P<0.001$.) Also, right index to ring digit ratio (R2D:4D) was recorded <1.00 in 36% and ≥1 in 64% subjects and left index to ring digit ratio (L2D:4D) was recorded <1.00 in 07% and ≥1 in 93% of subjects. This indicates sexual dimorphism in 2D:4D ratio is more prominent in the left hand of female.

Conclusion: Digital lengths especially index (2D) and ring (4D) digit lengths are often use to determine sexual dimorphism. Also, study over the variations of digital lengths have great medicolegal importance to determine age, sex and race of an individual.

Keywords: Index finger length (2D), ring finger length (4D), index to ring finger ratio (2D:4D)

Introduction

It has been known for a long time that any measurements of body parts can change with the alterations in size of the organs involved or general body size and this concept was defined concisely by Levinton[1]. Throughout the following decades, many studies have been conducted regarding body anthropometry and sexual variations. One such study is has gained marked interest in medical science that is measurement of digital lengths and their sexual variations. The index finger located between diabetes mellitus, hyper lipedemia etc. The other risk factors are high alcohol intake, positive family history, oral thumb and middle finger is the second digit (2D) and ring finger is located between middle and little finger are two most dexterous and sensitive fingers of a human hand[2]. Researchers claimed that the relative lengths of digits are set before birth[3] and they remain unchained rest of the life. Interestingly, in human hands, the relative lengths of the index finger and ring finger differ between two hands and even between male and female[3]. More recently, the researchers explored the relationship between the index to ring digit ratio (2D:4D) which has been found more practical applications. Many studies among different races have shown that index to ring digit ratio (2D:4D) ≥1 among female and <1.00 among male[4]. A wide variety of sex-dependent human behaviors are associated with 2D:4D ratios that has been stated by Manning J.T. & Fink B.[5] and those characteristics includes personality traits like dominance, aggression, reproductive success and sexual performance, sexual orientation, hand preference, verbal skills, different physical and mental health issues, or even musical and sporting talents. These associations

1. Assistant Professor, Department of Anatomy, Ad-din Women's Medical College, Dhaka.
2. Professor and Head, Department of Anatomy, Dhaka Medical College, Dhaka.
3. Lecturer, Department of Community Medicine, Ad-din Women's Medical College, Dhaka.

Correspondence: Dr. Karim Rezwan Hasan email: dr.rezwan21@gmail.com

appear to be often stronger for the right hand[6]. In the study of Manning[7], it is seen that smaller index fingers in women have been associated with higher levels of physical aggression throughout their life[8]. Women with less smaller index finger are reported as being more masculine and dominant in nature and tend to perform better in a number of physical activities[9]. It has been also reported that a number of physical and behavioral traits significantly depends on index (2D) and ring (4D) finger in both sexes. For example, males with smaller index finger and larger ring finger are more fertile and have high life time reproductive success. Also, they are more aggressive and assertive in nature and have high musical and sports aptitudes[10]. Again, male with excessive smaller index finger often has some attributes like left-handedness, good visuo-spatial ability[11], fast running speed[12] but they may also experience some severe health related problems like autism, Asperger's syndrome, prostatic carcinoma, Hepatitis-B related hepatocellular carcinoma, urolithiasis and rheumatoid arthritis but male having longer index finger often has higher risk of early heart disease[11]. On the other hand, females with long index finger are more fertile, have high reproductive success but also having higher risk of breast cancer and endometrial cancer. Again, female with an excess long index finger are associated with good verbal fluency but higher risk to have neurodegenerative disorders. It has been also reported that females with excessive small index finger with relatively large ring finger have greater tendency towards the homosexuality or bisexuality, spontaneous abortion, polycystic ovaries and also they are more aggressive and assertive in nature[10]. The ratio between the length of the index and ring digit (2D:4D) of an individual found to be correlated with the prenatal testosterone and estrogen levels[4]. There is evidence that a low 2D:4D been positively related to prenatal testosterone while a high 2D:4D is positively associated with prenatal estrogen exposure or in other word a low 2D:4D ratio has been shown to correlate with high testosterone levels which is characteristic of males while a high 2D:4D ratio is correlated with low testosterone level, a characteristic of females. Initially, some other studies have reported null findings regarding these correlation studies and challenge the relationship between 2D:4D and its sensitivity to androgen but in 2009, some experimental studies proved that enhancement of prenatal testosterone reduces 2D:4D and nullify all the challenges.[12]

Materials & Methods

The study was performed on one hundred (100) female medical students of Dhaka Medical College, Dhaka age ranging from 20-25 years. With the help of a digital vernier caliper the right index (2D) and ring (4D) finger lengths were recorded in centimeters. As ringer finger has two creases, the most proximal crease has been chosen. Length was recorded by measuring the crease-tip (c-t) length where "c" is the midpoint of crease at the base of the finger and "t" is extreme end (tip) of the finger that is furthest from the crease. The distance between these two points indicates the length of index (2D) or ring (4D) finger. Measurements were taken three times independently and the maximum length was taken for analysis. Procedure of measurement of index finger (2D) and ring finger (4D) is shown in Fig:-1.The index to ring digit ratio (2D:4D) was calculated by dividing the index finger length with ring finger length. Data was expressed as mean ± Standard deviation (±SD) as descriptive statistics. Paired Student's t-test was done to analyze the differences between lengths of right index finger (2D) and ring finger (4D) and their ratios among both hands of female. Statistical significance was accepted at ($P < 0.05$). This thesis work approved by the Ethical Review Committee (ERC) of Dhaka Medical College, Dhaka.

Results

Results are shown in Tables and Figures.

Table-1: Comparison between the lengths of right index (R2D) and left index (L2D) finger, right ring (R4D) and left ring (L4D) finger and right index to ring digit ratio (R2D:4D) and left index to ring digit ratio (L2D:4D) in female

Variables	Female (n = 100)	
	mean ± SD	P-value
R2D	6.710 ± 0.369 (5.952 - 7.813)	$P > 0.05^{ns}$
L2D	6.720 ± 0.362 (5.765 - 7.912)	
R4D	6.828 ± 0.390 (6.014 - 8.074)	$P < 0.001^{***}$
L4D	6.765 ± 0.388 (5.896 - 8.032)	
R2D:4D	0.982 ± 0.029 (0.931 ± 1.061)	$P < 0.001^{***}$
L2D:4D	0.993 ± 0.023 (0.943 - 1.054)	

Paired Student's 't' test, ns = not significant,
*** = significant at P <0.0001

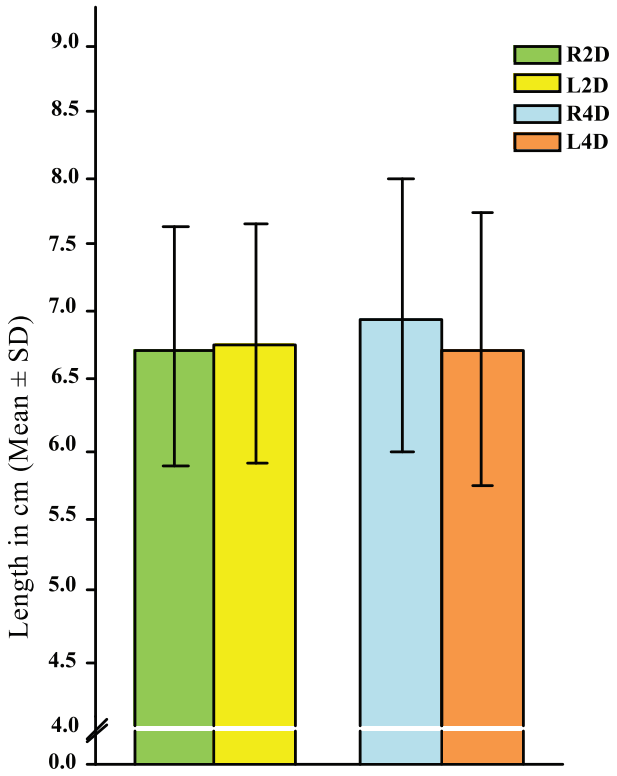


Fig-1 : Comparison between the length of right (R2D) and left (L2D) index finger and right (R4D) and left (L4D) ring finger

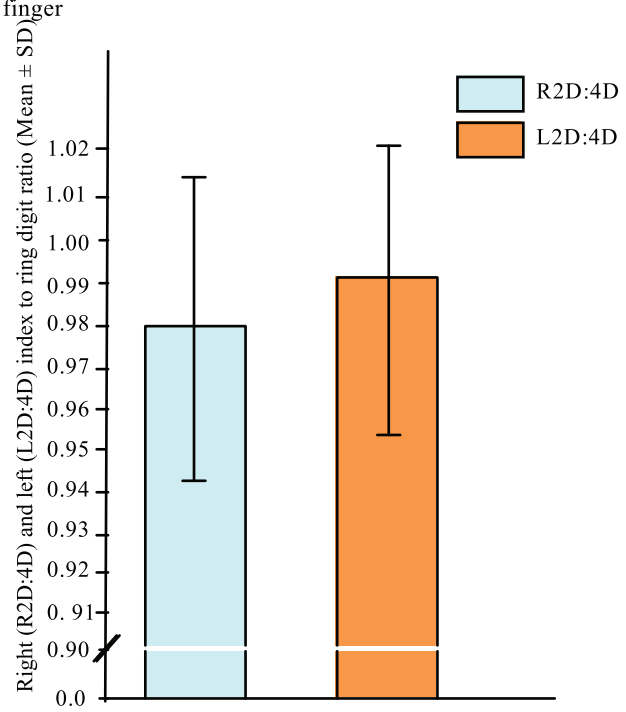


Fig. 2 : Right index to ring digit ratio (R2D:4D) and left index to ring digit ratio (L2D:4D) in female

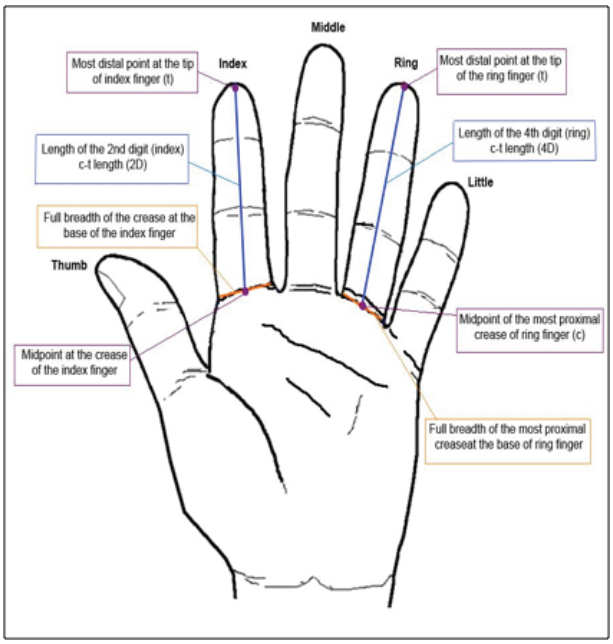


Fig 3 : Measurements of index (2D) and ring (4D) length

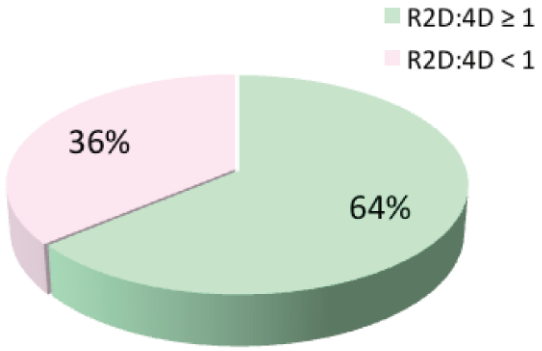


Fig.4: Right index to ring digit ratio(R2D:4D) in female

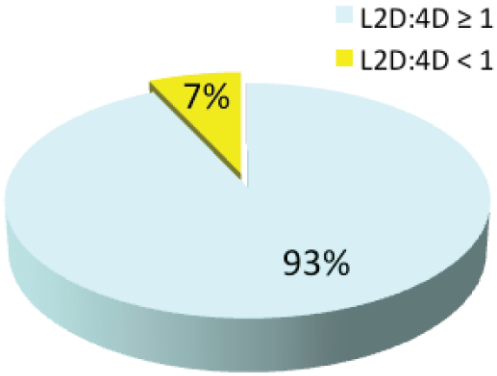


Fig.5: Left index to ring digit ratio (L2D:4D) in female

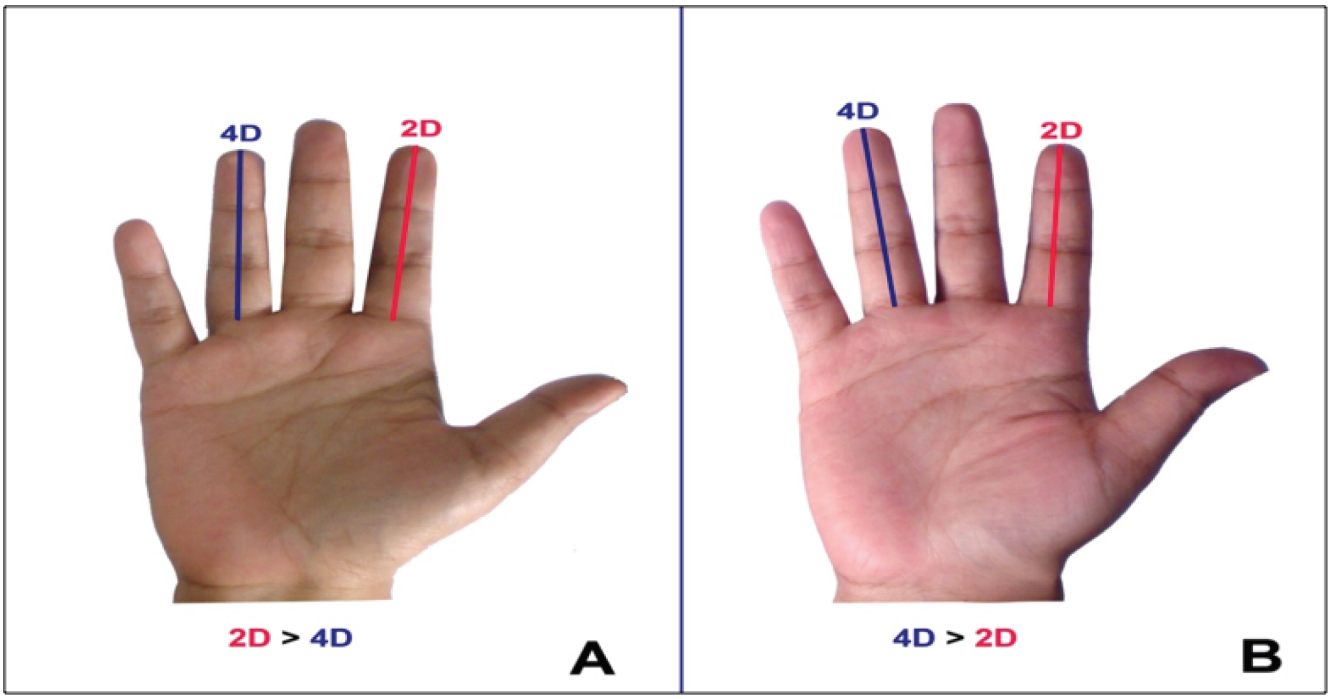


Fig. 6: Photograph showing Index (2D, red line) and ring (4D, blue line) digit length pattern in female.
(A) Typical female pattern, 2D> 4D (B) male pattern, 4D> 2D

Discussion

There was no significant differences between the length of right (R2D) and left (L2D) index finger (P > 0.05 ns). Significant difference between the length of right ring finger (R4D) and left ring finger (L4D) were observed in female (P<0.001) where right ring finger length (R4D) was higher than left ring finger length (L4D). There was significant difference between right index to ring digit ratio (R2D:4D) and left index to ring digit ratio (L2D:4D) where left index to ring digit ratio (L2D:4D) was higher than right index to ring digit ratio (R2D:4D) in female (P<0.001). In this study, right index to ring digit ratio (R2D:4D) was recorded <1.00 in 36% and ≥1 in 64% subjects and left index to ring digit ratio (L2D:4D) was recorded <1.00 in 07% and ≥1 in 93% of subjects that indicates sexual dimorphism in 2D:4D ratio is more prominent in the left hand among Bangladeshi female. The results of this study were very much familiar with the studies conducted by William et al.[13], Lippa, R.A.[14], Rahman Q.[15], Wilson GD.[16], KOSÏF R. and Diramali M. B.[17], Danborno et al.[18] and Ibegbu A.O. et al.[19] McFadden D. and Shubel E.[20] but differ from the study of Shima M. A. et al.[21]

Conclusion

Index (2D) and ring (4D) digit lengths and their ratio (2D:4D) are one of the precise method to determine sexual dimorphism. Also, study over the variations of digital lengths have great medicolegal importance to determine age, sex and race of an individual. Doing studies on digital lengths and ratios often reveal so many mysterious characters of human hand that indicates general sexual characters and hormonal status of adult population of Bangladesh.

Reference

1. Levinton, J.S., 2001. Genetics, Paleontology and Macroevolution. 2nd Edition. Cambridge University Press.
2. Fink, B. et al., 2004. Second to fourth digit ratio and facial asymmetry. Evolution and Human Behavior, 25, pp.125–32
3. Manning, J.T., 2011. Resolving the role of prenatal sex steroids in the development of digit ratio. Proceeding of National academy of Sciences (PNAS), 108(39), pp.16143–144
4. Baker., F., 1888. Anthropological notes on the human hand. The American Anthropology,1(1), pp.51-75.
5. Manning, J.T., 2006. Digit ratio (2D:4D) and physical fitness in males and females: Evidence for effects of prenatal androgens on sexually selected traits. Journal of Hormone and behavior , pp.545–49
6. Putz D.A. et al., 2004. Sex hormones and finger length. What does 2D:4D indicate? Evolution and Human Behavior, 25, pp.182–99
7. Manning, J.T., Churchill, A., Peters, M., 2007. The effects of sex, ethnicity, and sexual orientation on self measured digit ratio (2D:4D). Archives of Sexual Behavior, 36(2), pp.223-33
8. Wilson, G., 1983. Finger-length as an index of assertiveness

in women. Personality and Individual Differences, Vol. 4(1), pp.111-12

9. Neave, N., Laing, S., Fink, B., Manning, J., 2003. Second to fourth digit ratio testosterone and perceived male dominance. Proceedings. Biological Sciences, 270 (1529), pp.167-72
10. Manning, J.T., 2002. Digit ratio: A pointer to fertility, behavior, and health. New Brunswick, N.J, Rutgers University Press.
11. Manning, J.T., Baron, C.S., Wheelwright, S., Sanders, G. 2001. The 2nd to 4th digit ratio and autism. Developmental Medicine and Child Neurology, 43(3), pp.160-64
12. Manning, J.T., Scutt, D., Wilson, J., Lewis-Jones, D., 1998. The ratio of 2nd to 4th digit length: a predictor of sperm numbers and concentrations of testosterone, luteinizing hormone and estrogen. Human Reproduction, 13(11), pp.3000-04
13. Williams, T., Pepitone, M., Christensen, S., 2000. Finger-length ratios and sexual orientation. Nature, 404(6777), pp.455-56
14. Lippa, R.A., 2003. Are 2D:4D Finger-Length Ratios Related to Sexual Orientation? Yes for Men, No for Women. Journal of Personality and Social Psychology, 85(1) pp.179-88
15. Rahman, A.A. et al., 2010. Hand pattern indicates prostate cancer risk. British Journal of Cancer.pp.1-3
16. Wilson, G., 2010, Fingers to feminism: the rise of 2D:4D. Quarterly 26 Review-Summers. pp.25-32
17. KOSİF, R., DIRAMALI, M., 2012. Comparison of all hand digit length ratios in left and right handed individuals. Turkish Journal of Medical Science; 42(3), pp.545-52
18. B. Danborno, S.S. Adebisi, A.B. Adelaiye, S.A. Ojo., 2008. Sexual Dimorphism and Relationship between Chest, Hip and Waist Circumference with 2D, 4D and 2D:4D in Nigerians. The Internet Journal of Biological Anthropology, 1(2), pp.1-5
19. Ibegbu, A.O., et al., 2012. Anthropometric Study of the Index (2nd) and Ring (4th) Digits in Ebira Ethnic Group of Nigeria. Asian Journals of Medical Sciences, 4(2), pp.79-84.
20. McFadden D. et al., 2005. A Reanalysis of Five Studies on Sexual Orientation and the Relative Length of the 2nd and 4th Fingers (the 2D:4D Ratio). Archives of Sexual Behavior, 34(3), pp. 341–56
21. Shima M. Almasry et al., 2011. Index to ring digit ratio in Saudi Arabia at Almadinah Almonawarah province: a direct and indirect measurement study. Journal of Anatomy, pp.202-08

Original article

Socio-demographic characteristics and treatment seeking behaviour among elderly

Mohoshina Karim[1], Shayela Farah[2], Fahmida Khanam[3]

Abstract

Objectives: Population ageing is becoming a major concern both in the developed and developing countries. The objective of this study is to determine the socio-demographic characteristics of the elderly population, to identify their health problems and to assess their health seeking behaviour.

Methodology: A community based cross sectional study of 1041 subjects over 59 years old from three slums in the urban field practice area of Dhaka city was carried out.

Results: The total sample of 1041 elderly persons, 624(59.9%) were male and 417 (40.1%) were female. Regarding educational status, 820(78.8%) were illiterate. 897(86.2%) were employed and majority 616(59.2%) of them lived in nuclear family. 94.3% respondents were reported one or more health problems. 56.7% were suffering from chest pain, followed by locomotors disorder (51.1%), visual impairment (48.7%), vertigo (45.5%), unhealthy gum and teeth (44.4%). Around 95% of the respondents were taking some kind of treatment, while 34.7% attended hospital. About 41.1% elderly were complying with their treatment regimen. Statistically significant association was found between socio-demographic characteristic of geriatric people and their health status.

Conclusions: Due to a rapid increase in the number of elderly population, there is an urgent need to develop affordable and accessible geriatric health care services. Therefore, health related programmes should focus to improve the overall wellbeing of the aging population.

Key words: Elderly, urban slum, treatment seeking, behaviour.

Introduction

Health status is an important factor that has a significant impact on the quality of life of an individual. Many health problems are known to increase with age. There is a growing body of evidence that older people are at risk for multiple and co morbid conditions.[1] Ageing being a natural process affects each one of us. Discoveries in medical science and improved social conditions during past few decades have increased the lifespan of man. The age structure of the population in the developed countries has so evolved that the number of elderly people is continually on the rise.[2] Based on data from Bangladesh, life expectancy at birth is expected to be 76.9 years for men and 85.1 years for women in 2015, calculated based on the scientific report of ICDDR,B. At present, life expectancy at 60 years is additional 17.6 years for men and 18.9 years for women.[3] In South Asia, the percentage of the population living in urban areas is increasing and, as a part of this trend, Bangladesh is urbanizing at a rapid pace.[4] The number of elderly persons in Bangladesh was projected to double from 7.8 million in 2001 to 16.2 million by 2025.[5] The fact that more and more people are reaching their older adulthood has resulted in a change in the disease pattern such that chronic medical conditions have become prominent also in low-income populations. Chronic health conditions are now common in elderly persons and the prevalence of multiple chronic conditions is expected to increase.[6] Increased attention to health promotion and disease prevention are important for the appropriate care of the elderly. With the increasing life expectancy, a focus on preventive measures to decrease morbidity and improve quality of life in old age has also developed. Health behavior and lifestyle have become important areas of concern over the last 20 years. Social factors lay a significant impact on the health practices.[7] Since the elderly population is at a huge risk of major diseases and defects, members of health care units should handle their education carefully. Through such education, benefits are provided regarding protective and wellness development for many elderly people.[8] In this background the present study was undertaken to assess the socio demographic profile and the treatment seeking behaviour during illness of the elderly people living in the urban slums of Dhaka city.

1. Lecturer, Community Medicine. Dhaka Community Medical College Moghbazar, Dhaka-1217
2. Assistant Professor. Community Medicine. Dhaka Community Medical College Moghbazar, Dhaka-1217
3. Consultant, TB - Lab, National TB control Program Mohakhali, Dhaka-1212

Correspondence: Dr. Mohoshina Karim,
e-mail:kekakarim@yahoo.com

Methodology

This community based cross sectional study was done over 1041 geriatric peoples purposively selected from Moghbazar, Kamlapur, Bashaboo slums of Dhaka city during July to December, 2013 to assess their socioeconomic condition and identify their health problems. In the study the chronological age of 59 years (retirement age) has been considered as an old age for both male and female respondents. After obtaining a verbal consent, trained interviewers collected information by face to face interview using a pretested questionnaire having both structured and open ended questions. Analysis was carried out with the help of SPSS version-17 windows software program.

Results

Table: 1 Distribution of the geriatrics people by socio-demographic characteristics (n = 1041)

Variables	Frequency	Percent
Age group		
≤ 60 years	756	72.6
>60 years	255	27.4
Mean = 60.51; (SD = ± 6.937)		
Sex		
Male	624	59.9
Female	417	40.1
Educational qualification		
Illiterate	820	78.8
Literate	221	21.2
Occupation		
Unemployed	144	13.8
Employed	897	86.2
Monthly income		
Taka ≤2000	178	17.1
Taka 2001-4000	370	35.5
Taka 4001-6000	247	23.7
Taka 6001-8000	127	12.2
Taka >8000	119	11.4
Mean = 4747.02; (SD = ± 2796.368)		
Type of family		
Nuclear	616	59.2
Joint	425	40.8
Spouse		
Present	763	73.3
Died	232	22.3
Divorced	13	12.2
Separated	33	32.2

Majority (94.3%) respondents were having one or more health problems. 56.7% were suffering from chest pain, followed by locomotors disorder (51.1%), visual impairment (48.7%), vertigo (45.5%), unhealthy gum and teeth (44.4%) and the other disorders experienced by the respondents are listed in Table 2.

Table: 2 Distribution of the geriatrics people by health problems (n= 1041)

Health problems	Frequency	Percent
Yes	982	94.3
No	59	5.7
Distribution of problems*		
Skin disorder	548	41.9
Visual Impairment	953	48.7
Unhealthy gum & teeth	641	44.4
Hearing loss	480	30.0
Neurological problem (vertigo)	497	45.5
Locomotive disorder (Joints pain)	735	51.1
Chest pain	330	56.7
Respiratory disorders	397	31.4
Gastrointestinal	427	24.9
Uro-genital	355	43.9
Psychiatric problem	655	32.5

*Because of the multiplicity of health problems in subjects total percentage is more than hundred percent.

Around ninety five percent (94.3%) of the respondents were taking some kind of treatment. 34.7% of them were taking treatment from hospital. About 41.1% elderly were complying with their treatment regime. The most common reason for non compliance was the perception of the patient needlessness of medicine 26.1%, followed by non availability of medicine and high cost of treatment by 24.2% and 19% respondents respectively. (Details in Table 3)

Table: 3 Treatment seeking behaviour of geriatric people (n= 1041)

Taking any treatment	Frequency	Percent
Yes	982	94.3
No	59	5.7
Type of treatment n= 982		
Hospital	341	34.7
Clinic	31	3.2
Private physician	15	1.5
Ayurbada	24	2.4
Village quacks	33	3.4
Pharmacist	279	28.4
Health workers	64	6.5
Hospital & Pharmacist	195	19.9
Compliance with treatment		
Yes	404	41.1
No	578	58.9
Reasons for non compliance n=578		
Feels no need of medicine	151	26.1
Non availability of medicine	140	24.2
High cost treatment	110	19.0
Forgets to take medicine	89	15.4
No relief with medicine	36	6.2
Side effects of medicine	52	9.0

Statistically positive association was found between socio-demographic characteristic (age, sex, education, occupation, monthly family income) of geriatric people and their health status.

Table: 4 Association between socio-demographic of geriatrics people and their health status

group		Health Status				Total	χ2-Test	P-value
		Good		Not Good				
		No.	%	No.	%			
Age	≤ 60 years	152	20.1	604	79.9	756	13.166	0.000
	> 60 years	30	10.5	255	89.5	255		
Sex	Male	124	19.9	500	80.1	624	6.161	0.01
	Female	58	13.9	359	86.1	417		
Education	Illiterate	126	15.4	694	84.6	820	12.003	0.001
	Literate	56	25.3	165	74.7	221		
Occupation	Unemployed	3	2.1	141	97.9	144	29.374	0.000
	Rickshaw puller	31	22.1	109	77.9	140		
	Small business	133	18.7	490	81.3	603		
	House wife	35	22.7	119	77.3	154		
Monthly income	Taka ≤ 5000	83	13.2	548	86.8	631	20.816	0.000
	Taka >5000	99	24.1	311	75.9	410		

Logistic regression analysis showing the effect of independent variables on geriatrics people's current health status. The variables age of the respondents, sex, educational qualification, occupation, monthly family income and dependency had significant influence on the health status.

Table: 5 Logistic Regression independent variable on dependent variables health status (Good health & not good health)

Independent variables	B	S.E.	χ2-Test	Sig.	95% C.I.
Age of the geriatrics people	.683	.228	8.951	.003*	1.266-3.099
Sex	.483	.254	3.619	.050*	.986-2.664
Education	-.342	.205	2.784	.045*	.475-1.062
Occupation	-.328	.082	16.159	.000*	.614-.845
Monthly family income	-.622	.180	11.993	.001*	.378-.763
Type of house	.257	.200	1.653	.199	.874-1.914
Type of family	-.666	.176	14.234	.000*	.364-.726
Spouse	.122	.232	.276	.599	.717-1.780
Dependency	.612	.239	6.554	.010*	1.154-2.944
Constant	2.310	.652	12.538	.000	

Discussion

The present study was undertaken to identify the socio-demographic profile and treatment seeking behaviour among the elderly residing in the urban slums of Dhaka city. In this study age, income, education, employment status of the respondents correlate with the studies done by Ahmed S, et al[9], Ingle GK et al[10].

Regarding belongingness there is similarity with results from urban slum of Central India; where elderly subjects belonged to nuclear family 53.50% while 33.25% were belonged to joint family and 13.25% belonged to three generation family. The proportion of the nuclear family in present study was high because it was conducted in urban areas, where nuclear family culture is more prevalent[11].

Regarding marital status near about two third of the respondents had spouse. A community-based cross-sectional study[12] was carried out among 407 geriatrics people in an urban slum India, where 96.31% of the elders lived with their spouse and/or their children and 8.1% lived alone.Majority respondents were having one or more health problems. Chest pain, locomotors disorder, visual impairment, vertigo, unhealthy gum and teeth, uro-genital problem, skin disorders were the common problems. In a study conducted by Lena A. et al[13] at Karnataka on 213 elderly patients attending the outreach clinics to study their health and social problems where all the respondents (100%) had health problems, the most common being hypertension, osteoarthritis, diabetes, or bronchial asthma. Others problems were cataract, anaemia, and skin problems. Similar findings were observed in Bhatia et al's[14] study in urban and rural area of Chandigarh to identify the health related

problems and loneliness among the elderly people where 86.1% reported one or more health related problems. The main problems were disorders of circulatory system(51.2%), musculoskeletal and connective tissue(45.7%), hypertension (41.6%), cataract (18.6%), respiratory (10.2%), diabetes mellitus (11.9%) and skin disorders (4.2%). Another study done in Haryana to assess morbidity pattern in aged persons revealed common morbidity conditions as chronic bronchitis (14.6%), followed by skin disease (13.5%), accidental injuries (12.7%), acute respiratory conditions (7.5%) and unspecified fevers (6.2%)[15].

Around 95% of the respondents in this study were taking some kind of treatment. Similar observations were observed by study done by Barik D[16] where majority (73%) of the elderly took treatment in urban areas, irrespective of economic status. In this study, only 34.7% elderly people were taking treatments from hospital. About 41.1% elderly were complying with their treatment regime. The most common reason for non compliance was the perception of the patient needlessness of medicine, followed by non availability of medicine and high cost of treatment. Similar reason for non compliance were reported by studies done by Sharma S, et al.[17]

Statistically positive association was found between socio-demographic characteristic of geriatric people and their health status. This observation was not close to Udhayakumar P et al[18] study done in Tiruchirappalli district, Tamilnadu where there is no significant relationship between the age, monthly income, number of elders in family and quality of informal care received by the elders. Logistic regression analysis showing the effect of independent variables on current health status. Age, sex, education, occupation, monthly family income and dependency had significant influence on health status. Barriers of geriatric care should be identified and rectified so that they can seek better care.

Conclusion

As the vulnerability of the ageing population is increasing, in order to cope with the situation, it is necessary that the caregivers be made aware of the physical and mental conditions and problems of the elderly people so as to meet their needs as far as possible in the home setting itself.

References

1. A Study on Morbidity Profile & Its Relationship with Disability and Psychological Distress among Elderly People in Northern India. http://ije. Oxford journals. Org /cgi/content /full /32/6/ 978.

2. Thomas V, Lavanya K, Muraleedhar M: Morbidity profile and health seeking behaviour of the elderly in urban slums of Hyderabad, Andhra Pradesh, India- A cross sectional study: Int J Cur Res Rev. 2012; 04 (19).

3. Health and demographic surveillance system-Matlab.V.42. Registration of health and demographic events 2008. Dhaka: International Centre for Diarrhoeal Disease Research, Bangladesh; 2010;71.(icddr,b scientific report no. 109).

4. Osman FA: Public Health, Urban Governance and the poor in Bangladesh: Policy and Practice; Asia-Pacific Development Journal: 2009, 16 (1).

5. Bangladesh Bureau of Statistics. Population census 2001: preliminary report. Dhaka: Bangladesh Bureau of Statistics; 2009, 43.

6. Wolff JL, Starfield B, Anderson G. Prevalence, expenditures, and complications of multiple chronic conditions in the elderly. Arch Intern Med. 2002; 162 : 2269 –76.

7. Nagar S, Nagar N: Impact of social factors on health practices of the elderly: an analytical study in rural Surendranagar; Int J Res Med Sci. 2013; 1(2): 116-122.

8. Tabloski PA. Challenges of Aging and Cornerstones of Excellence in Nursing Care. In: Gerontological Nursing, 2010, 87-343.

9. Ahmed S, Shirin S, Mohsena M: Geriatric Health Problems in a Rural Community of Bangladesh; Ibrahim Med. Coll. J.2007; 1(2) : 17-20

10. Ingle GK, Nath A: Geriatric Health in India: Concerns and Solutions; Indian J Community Med. 2008; 33(4): 214–218.

11. Singh JP, Singh Brig. PN, Kasturwar NB: Socio-Demographic Profile & Challenges Of Ageing Population In An Urban Slum of Central India; International Journal of Biological and Health Science, 2012, 1(1), 01-07.

12. Thakur RP, Banerjee A, and Nikumb VB: Health Problems among the Elderly: A Cross-Sectional Study, Ann Med Health Sci Res. 2013, 3(1) : 19–25.

13. Lena A, Ashok K, Padma M, Kamath V, Kamath A. Health and Social Problems of the Elderly: A Cross-sectional Study in Udupi Taluk, Karnataka. Indian J Community Med 2009; 34:131-4.

14. Bhatia SPS, Swami HM, Thakur JS, Bhatia V. A study of health problem and loneliness among elderly in Chandigarh. Indian Journal of Community Medicine 2007; 32 (4): 255-58.

15. Kapil U, Sood AK. Morbidity Pattern in Aged Persons Attending Rural health centres in Haryana. Indian Journal of Public Health 1989; 33(4):7

16. Barik D. Living Arrangement and Treatment Seeking Behavior of the Elderly in India: http://epc 2012. princeton.edu/papers/121300.

17. Sharma S, Thakur M and Kaur S: Health Problems and Treatment Seeking Behaviour among Elderly; Help Age India-Research & Development Journal. 2012;18 (2).

18. Udhayakumar P and Ponnuswamy I: Informal Care Received by Elderly Residing in Slums of Tiruchirappalli District, Tamilnadu, India. International Research Journal of Social Sciences; 2012;1(1), 15-18.

Original article

Evaluation of Rational Prescribing Patterns Of A Government Teaching Hospital And A Private Teaching Hospital By Undergraduate Medical Students In Dhaka, Bangladesh.

Nadia Farha[1], Touhidul Karim Majumder[2]

Abstract

Objective: Irrational prescribing is a major drawback in healthcare delivery in Bangladesh. The prescribing pattern of doctors in two of the tertiary care referral centers was evaluated to identify the correctness of pattern, components and adherence to the WHO core prescribing indicators.

Materials & Methods: A total of 120 prescriptions 0f Holy Family Red Crescent Medical College& Hospital (HFRCMCH) and 120 prescriptions of Dhaka Medical College & Hospital (DMCH) were collected at random in the outpatient department within a period of one month. These were then analyzed by WHO/ INRUD indicators.

Results: There were average 3.38 drugs per prescriptions in HFRCMC and 3.65 drugs in DMCH. No drugs were prescribed in generic name in both medical college hospitals. About 13.6% drugs were prescribed from the essential drug list in HFRCMCH and 25.83% in DMCH. Eighty four percent of the prescriptions were complete in respect to patient medical information in both hospitals. Antibiotics were prescribed at 33% in HFRCMCH and 24.38% at DMCH. Injections were prescribed only in 0.29% at HFRCMCH 24.38% at DMCH.

Conclusion: The prescribing pattern of doctors at the tertiary care referral centre was evaluated for rational drug therapy. The medical students participate in the exercise enthusiastically and perhaps understood the issues related to rational prescribing effectively. These results should be used to create awareness among the future doctors in generating rational prescriptions.

Keywords: Medical Students, Rational Prescribing.

Introduction

Prescription writing is an art as it reflects the instructions given by prescriber to the patient. Irrational prescription of drug use is a common occurrence in clinical practice. The cost of such irrational drug use is enormous in terms of both scarce resources and the adverse clinical consequences of therapies that may have real risks but no objective benefits. This is especially true in case of developing countries such as India, Bangladesh with a huge population that makes access to health care delivery systems difficult[1]. Improper prescribing habits leads to an in effective and un safe treatment, exacerbation or prolongation of illness, distress and harm to the patient and higher costs. They also make prescriber vulnerable to influences which can cause irrational drug prescribing. Important reasons of irrational drug prescription are lack of knowledge about drugs, unethical drug promotions and irrational prescribing habits of clinicians[2]. How to investigate drug use in health facilities, following the collaborative work of international network for the rational use of drugs (INRUD) and the WHO essential drugs and medicines policy department(WHO-EDM) provided useful tools for objective and reproducible measures of the effectiveness and efficiency of drug use[3]. Monitoring of prescriptions and drug utilization studies can identify the problems and provide feedback to prescribers so as to create awareness about irrational use of drugs[4]. Variations in types of drugs used and in the way they are used is considerable even when comparing small adjacent areas and in comparing physician working within same area[5]. Drug Utilization Reviews are useful for obtaining information about drug usage patterns and for identifying high cost drugs, which are of economic

1. Assistant Professor, Department of Pharmacology, Holy Family Red Crescent Medical College
2. Associate Professor, Department of Gastroenterology, Dhaka Medical College.

Correspondence: drnadiafarah@gmail.com

interest[6]. Data about drug usage patterns is not satisfactory. There is lack of data on prescription pattern studies. It is essential to define prescribing pattern and to identify the irrational prescribing habits to send are medial message to the prescribers. There is need for mass awareness among the physicians and consumers about the concept of essential medicines, banned drugs, advantages of generic drug prescription and use of rational drug combination. Rational drugs policy or an essential drugs list will be useless unless accompanied by intensive efforts to improve the education and updating of doctors and pharmacists and to reduce the commercial pressures on doctors to prescribe unnecessary drugs. Keeping these facts in consideration the present study was planned to assess the prescription pattern in the OPD of Dhaka Medical College and Hospital and Holy Family Red Crescent Medical College and Hospital, Dhaka, Bangladesh. The current study was an attempt to teach the 4th year medical students about the skills to audit prescription from their teaching hospital. So much so that could they compare it with Govt, teaching hospital like DMCH. To attain this skill "an exercise or prescription audit"was introduced as a teaching and learning strategy for the 4th year MBBS students of Holy Family Red Crescent Medical College and Hospital where they collected, analyzed and audited prescriptions from their own teaching hospital and also from Dhaka Medical College and Hospital on the basis of INRUD indicators[7]. International Network of Rational Use of Drugs (INRUD) has developed a list of indicators of rational prescribing.

Materials and Methods

The 4th Year medical students of HFRCMCH were divided in to 6 groups, each group consist of 20 students. Total 120 prescriptions of the registered physicians and specialists of different sectors of OPD of HFRCMCH are collected at random within a period of one month.Next month total 120 prescriptions of the registered physicians and specialists of different sectors of OPD of DMCH are collected at random within a period of one month. No attempt has been made to categorize the prescription according to patient age, sex or disease profile. Each group of students have taken 4 hours to analyze and audit using INRUD indicators. They are also provided with essential drug list and BDNF. Then in the next practical class students compiled the individual group results into a combined one and audited the prescription using INRUD indicators.

Following parameters were analyzed.

World Health Organization's Core Drug Use Indicators to Investigate Drugs use in Health Facilities.

Prescribing indicators

1. Average number of drugs per encounter
2. Percentage of drugs prescribed by generic name
3. Percentage of encounters with an antibiotic prescribed
4. Percentage of encounters with an injection prescribed
5. Percentage of drugs prescribed from essential drug list
6. Whether prescription is complete with respect to-

a) Format

b) Doges and duration

c) Patient medication information

Results

After compiling the results, it was observed that there were 3.38 drugs per prescription in (Table-I) 3.65 drugs per prescription in (Table II). No drugs were prescribed in generic name. both in Table-I and Table-II. Seventy one percent of prescriptions were complete with regards to standard prescription format in Table-I and 47.75% of prescriptions were complete in regard standard prescription format in Table–II. Only 13.6% drugs were prescribed from the essential drug list in Table-I but 25.83% drugs were prescribed from the essential drug list in Table– II. Both in Table-I and Table–II, 84% of prescriptions were complete in respect to patient medical

Table I :

Results of Prescription audit in private teaching Hospital (HFRCMCH) n= 120	
	Number
Number of Prescriptions	120
Average number of drug per prescription	3.38%
Percentage of drugs prescribed by generic name	0%
Percentage of prescription with antibiotic prescribed	33%
Percentage of drugs prescribed from essential drug list	13.6%
Percentage of prescription with injection prescribed	0.29%
Whether prescription is complete with respect to a) Format b) dosage & duration c) patient medication information	 71% 100% 84.16%

Table II:

Results of Prescription audit in Govt. teaching Hospital (DMCH) n= 120	
Prescribing indicators	Number
Number of Prescriptions	120
Average number of drug per prescription	13.65%
Percentage of drugs prescribed by generic name	10%
Percentage of prescription with antibiotic prescribed	124.38%
Percentage of drugs prescribed from essential drug list	125.83%
Percentage of prescription with injection prescribed	12.73
Whether prescription is complete with respect to	
Format	47%
dosage & duration	95%
information	84%

information. Antibiotics were prescribed in 33% in Table- I and 24.38% in Table – II. Injections were prescribed only in 0.29% of the prescriptions in Table—I and in 2.73% of the prescription in Table– II.

Discussion

The WHO prescribing indicators have provided a reproducible and objective measure of Characterizing prescriptions by clinicians. This study reveals areas of irrational prescribing that needs to be addressed with intervention programmes. Whilst the WHO guidelines on rational use of drugs had reference values of (1.6-1.8) drugs per encounter[8], the average of 3.38 (table-I) and 3.6 (Table – II) drugs prescribed per patient encounter as seen in this study is comparatively high. No doubt, a high number of drugs prescribed to a patient increase the risk of drug interactions, affects compliance and suggests a tendency towards poly pharmacy with all its attendant ills. In this study, injection use was found to be 12.73% (Table-II). This is close to the WHO reference values of 10.1-17.0 as reported in a WHO sponsored field test in south Nigeria. It is much lower 0.29% that reported in table-I. It is conceivable that efforts by governments and professional associations on education on the dangers of high injection use in an era of many blood borne infections like HIV and hepatitis B may be paying off since these studies were all done much earlier, most of them in public sector.

The WHO expects a 100% prescription of drugs in generic name. However, none of drugs prescribed in both Table-I and Table-II in this study were done in generic name. This is very low. A much lower value of 4.4% were reported from Dubai in United Arab Emirates[9]. Increasing generic prescribing could substantially reduce the cost of drugs for the patients and reduce cost for pharmacies. This study also showed lower generic prescription both in public and private health facilities. Antibiotic resistance among pathogenic micro- organisms is a matter of worldwide concern. Antibiotics are among the most commonly prescribed drugs in hospitals and in developed countries. Around 30% of the hospitalized patients are treated with these drugs[10].

In the present study, antibiotics were prescribed in 33% (Table-I) and 24.38% (table-II). In a related study in a private hospital in Dubai, the finding of 21.4%.antibiotics prescription was much lower than this study. A study conducted in Jordan, the percentage of prescriptions involving antibiotics averaged 60.9%. In this study 13.6% in Table-I, 25.83% in Table-II, prescriptions were prescribed from essential drug list. However, all the clinicians admitted to having knowledge of the existence and usefulness of the essential drug list. About 100% prescriptions in Table-I and 95% prescriptions in Table-II were provided with proper instructions regarding drug dosing, formulation and duration, which was 70% in the study of Rahman Z et al[11].

In this study 84.16% prescriptions in Table-I and 84.17% prescriptions in Table-II contained proper instruction. Irrational prescribing is perhaps due to lack of knowledge of private practitioners on how to prescribe a drug and what information they should provide to their patieants[12].

Conclusion

This preliminary study could promote the physicians of today to imbibe and practice the principles of "rational drug therapy". It should be followed in the interest of patients health care and legal consequences of injudicious medication can also be avoided. The present exercise was an attempt to sensitize and to educate the 4th year under graduate medical student about skills

required to evaluate prescribing pattern and rational use of drugs. It will also help them become future policy makers in formulating and implementing programs aimed at improving prescription practices. However, the present study provides important useful baselines data, which will be useful for comparison when any drug utilization study would be carried out in future.

References

1. Ramsay LE. Bridging the gap between clinical pharmacology and rational drug prescribing. Br J Clin Pharmacol. 1993; 3S:575-576.
2. M de Vries, TPG, Henning RH, Hogerzeil HV, et al. (1994)'. Guide to Good prescribing. A practical guide WHO.
3. Pradhan SC, Shewade DG, Shashindren CH, et al. Drug utilization studies. Natl Med j Ind. 1988; 1: 185-189.
4. Molstad S, Hovehus B, Kroon L, et al. (A prescription of antibiotics to Out patients in hospital clinics, community health centre & private practice. Eur J Clin Pharmacol. 1990; 39:9¬12.
5. Marshner JP, Thurmann P, Harder S, et al. Drug utilisation review on a surgical intensive care unit. Int I Clin Pharmacol Ther. 1994; 32: 447-451.
6. S P Ravi, Partha P, Shenoy N. (2002) Prescribing patterns in medical outpatients. Int j Clin Pract. 56 (7): 549-551.
7. Anker M, Jokobowiez B, Fresle DA, Hozerzil HV. How to investigate drug use in health facilities; WHO / DAP/1993.
8. Hazra A, Tripathi SK, Alam MS. Prescribing and dispensing activities at the health facilities of a non-governmental organization. Natl Med / India 2000; 13 : 177-182.
9. Rishi RK, Sangeeta S, Surendra K, Tailang M. Prescription audit: experience in Garhwal (Uttaranchal), India. Trop Doct. 2003: 33: 76-79.
10. Van der Meer JW, Gyssens IC, Quality of antimicrobial drug prescription in hospital. Clin Microbiol Infect. 2001; 7:12-15.
11. Rahman Z, Nazneen R, Begum M. Evaluation of prescribing pattern of the private practitioners by the undergraduate medical students. Bangladesh J Pharmacol, 2009; 4:73-5.
12. De Vries TPGM, Henning RH, Hogerzeil HV, Fresle DA. Guide to good prescribing: A practical manual. WHO/ DAP/ 94, 11:1994.

Review article

Adolescent smokers and cessation: a systematic review of prevalence studies

Shayela Farah[1], Farzana Mahejabin[2], Shireen Ayesha Siddiqua[3], Molla Mizanur Rahman[4]

Abstract

The health hazards of smoking are well documented and prevention of smoking has been described as the single greatest opportunity for preventing non-communicable disease in the world today. Teenage smoking prevalence is around 15% in developing countries and around 26% in developed countries. Recent studies provide information on the efficacy of many different smoking cessation methods, but controversy persists over what method of adolescent smoking cessation should be employed. This review article seeks to evaluate the efficacy and validity of tobacco control policies in affecting adolescent smoking behavior that may generally be made more effective if they are supported by Government agencies and advocacy groups.

Introduction

Cigarette smoking is one of the leading causes of preventable morbidity and mortality.[1] Globally, there are currently 4 million tobacco attributable deaths each year, with current trends driving a rise to 10 million deaths per year by the 2030s.[2] An estimated 150 million adolescents worldwide use tobacco and approximately half of these young smokers will die of tobacco‐related diseases in later life.[3] Adolescent smokers are also subject to more immediate health consequences, such as respiratory and non‐respiratory effects,[4] changes in serum cholesterol[5] and nicotine dependence and withdrawal[6]. Although preventing the initiation of smoking remains a major goal of tobacco control, prevention programs directed at adolescents have shown limited effectiveness to date[7]. Moreover, once adolescents start smoking, the impact of prevention programs, whether on experimental or regular smokers, is small and inconsistent across studies[8]. It is estimated that adolescent adolescence have been associated with positive subjective health changes, such as improved respiratory cigarettes will continue to smoke for another 16–20 smokers who reach a consumption level of at least 100 years.[9] Even brief periods of smoking cessation during health and a general sense of feeling healthier, fitter and more energetic.[10]

Among adolescents in the early stages of smoking onset, alternating periods of smoking and abstinence are common.[11] Yet longitudinal studies show that only 3-12% of adolescent daily or regular smokers[12] and 10–46% of adolescent non‐daily or occasional smokers[13] no longer smoke 1-3 years later. This suggests that the likelihood of achieving abstinence, although generally low, is greater if a cessation attempt occurs at lower levels of consumption. Other reports, however, provide evidence that even adolescent smokers in the early stages of smoking onset experience difficulty attempting cessation[14]. Indeed, symptoms of nicotine dependence, which make cessation difficult, can develop soon after smoking initiation[15,16] Worldwide, about half a billion of the children and adults younger than 35 years of age already smoke or will do so if current uptake rates persist, and given current cessation patterns, relatively few will quit[17]. In all countries, young adults who smoke face about a decade of life lost if they continue and hence have much to gain by stopping.[18] Recent reviews advocate the intensification of efforts to develop and implement smoking cessation programs for adolescents.[19,20] In addition, the goal of increasing cessation attempts among adolescent smokers has been incorporated into a set of nationwide public health goals.[21] This has created a critical need to document the prevalence of cessation attempts among adolescent smokers. Therefore, the present study summarizes the measures used to estimate attempts at smoking cessation and quantifies the prevalence, frequency and duration of cessation attempts

1. Assistant Professor, Department of Community Medicine, Dhaka Community Medical College,
2. Associate Professor, Department of Community Medicine, Dhaka Community Medical College,
3. Professor, Department of Community Medicine, Ad-din Women's Medical College,
4. Assistant Professor, Department of Orthopaedic and Traumatology, Dhaka National Medical College,

Correspondence: Dr. Shayela Farah,
E-mail: shayelafarah@yahoo.com.

among adolescent smokers, generally, and according to age and level of cigarette consumption.

Rationale

Long-term tobacco smoking can have adverse effects in nearly every organ of the body and cause a variety of diseases. In the United States, the adverse health effects from cigarette smoking account for more than 480,000 deaths among adults, or nearly one of every five deaths; more deaths are caused each year by tobacco use than by all deaths from human immunodeficiency virus (HIV), illegal drug use, alcohol use, motor vehicle injuries, suicides, and murders combined.[22] Cigarette smoking damages health because of the constituents of tobacco smoke. It contains over 4,700 chemical compounds of which about 60 are carcinogenic, and cigarette smokers' face continual exposure to them for years.[23] Cancer was among the first diseases causally linked to smoking. Smoking causes cancers of the bladder, oral cavity, pharynx, larynx, esophagus, cervix, kidney, lung, pancreas, and stomach, and acute myeloid leukemia. Smoking causes about 90 percent of lung cancer deaths in men and women.[24] Effects of second-hand smoke are particularly harmful for young children and children with asthma. It is responsible for between 150,000 and 300,000 lower respiratory tract infections among children under 18 months of age each year.[25] Studies in Bangladesh have shown that tobacco consumption has a direct impact on the health of poor households, with poorer people spending less on food, resulting in malnutrition. The studies have found that the typical poor smoker could add over 500 calories to the diet of one or two children with his or her daily tobacco expenditure. Applied to the whole country, an estimated 10.5 million people who are currently malnourished could have an adequate diet if money spent on tobacco were spent on food instead.[26] Recent studies have addressed the problem of adolescent smoking in a number of different ways. Motivation to quit smoking, as well as methods to help adolescent patients stop smoking, including smoking bans and adolescent smoking cessation programs are reviewed here.

Methodology

Five types of tobacco control policies were considered that have been examined empirically and can be directly implemented by national or sub national Government agencies: (1) taxation, (2) restrictions on advertising, (3) health warning labels, (4) communicating with adolescents and their family members, and (5) school education programs to increase the utilization of cessation treatments and services. The ultimate goal of tobacco control policies is to improve health by reducing tobacco use. The predicted effects are based on reviews of the literature and the advice of an expert panel.

Discussion

The majority of available evidence on smoking cessation interventions relates to adults, particularly regarding medicines. An estimate of a young person's nicotine dependence can be used to determine which cessation intervention (or combination) is most appropriate.

Increasing taxes

The WHO reports[27] that although many countries now use non price interventions, only a few (including Mauritius, Mexico, the Philippines, Poland, and Turkey) have been using large increases in specific excise taxes on tobacco to reduce smoking.[28] An International Agency for Research on Cancer review of more than 100 econometric studies confirmed that tobacco taxes and consumption are strongly inversely related.[29] It concluded that a 50% increase in inflation-adjusted tobacco prices reduces consumption by about 20% in both high-income countries and low- and middle-income countries[30]. Higher taxes are particularly effective in poorer or less educated groups and help prevent young people who are experimenting with smoking from becoming regular smokers.[31] Smuggling is a concern when tobacco taxes rise; about 10% of all cigarettes manufactured worldwide are already untaxed.[32] Use of specific excise taxes on tobacco (rather than ad valorem taxes), stronger tax administration, and practicable controls on organized smuggling can, however, limit the problem.[33]

Banning advertising and sponsorship of tobacco products

Advertising increases positive user imagery of tobacco, distorts the utility of tobacco use, increases curiosity about tobacco use[34] and influences normative beliefs and perceptions of tobacco use prevalence,[35] all predictive of future smoking experimentation. Youth exposure to tobacco marketing has been associated with a doubling of the chances of initiation.[36] Comprehensive bans are the only effective way to eliminate tobacco marketing exposure, as the tobacco industry subverts restrictions by substituting marketing channels are not covered by existing laws.[37]

Though tobacco advertising is banned throughout the European Union, China, and some other countries, cigarettes are still among the most heavily advertised and promoted products in the world, with spending on tobacco marketing reaching $8.6 billion annually in the United States alone.[38] In 2011 Australia, which had already banned advertising, introduced plain packaging for tobacco products, removing all brand imagery. The brand is printed only in small standard lettering below a pictorial warning. Recent evidence suggests that plain

packaging increases cessation attempts39,[40] Plain packaging goes beyond the prominent, rotating pictorial warning labels on tobacco products that have helped increase cessation attempts in Canada, Thailand, and elsewhere.[41] Pictorial warnings can reach even illiterate persons, and half the deaths from tobacco in India occur among the illiterate.[42]

Health warning labels

Warning labels have been found to inform smokers about the health hazards of smoking, encourage smokers to quit, and prevent nonsmokers from starting to smoke. Warning labels on tobacco products are an ideal way of communicating with smokers. Warning labels have the potential to have a significant impact on smoking behavior. Further, two-thirds of all smokers indicate that the package is an important source of health information and health knowledge is strongly associated with an intention to quit smoking.[43,44]

More than 90 percent of Canadian youth agree that picture warnings on Canadian cigarette packages have provided them with information about the health effects of smoking and make smoking seem less attractive.[45] An Australian study examined the impact of the introduction of graphic health warning labels on adolescents. The authors found that adolescent experimental and established smokers were more likely to think about quitting, and intentions to smoke were lower among those students who discussed the new warning labels.[46] A Greek study of adolescents indicates that proposed European Union pictorial warning labels were more effective at informing about the health effects of smoking and preventing initiation than the previous text only labels[47].

Communicating with adolescents and their family members

Adolescents are often concerned about confidentiality and issues relating to trust and embarrassment.[48] It is therefore important to stress that the confidentiality of anything the adolescent discloses will be respected. Communication with adolescents is more successful when it is perceived as being non-judgmental. Patience, good listening skills and asking open ended questions are other qualities that are valued in consultations by adolescents.[49] Children with parents who smoke are more likely to be the "early adopters" of smoking in their peer group.[50] Reducing parental smoking therefore may have a wider benefit beyond the family unit by reducing the transmission of smoking through peer groups.[51] Increased parental supervision or interaction may decrease smoking. A survey of New Zealand adolescents aged 14–15 years from 145 high schools found that higher amounts of parental monitoring outside of school hours had an increasingly protective effect against adolescent smoking. It was also found that adolescents who were the least attached to their parents were more likely to smoke[52].

School education programs

More recent programs have focused on teaching life skills and about the sociopolitical climate surrounding tobacco use. Studies of school education policies at a program level yield mixed results.[53] Some studies find reductions in prevalence rates as high as a 50% and effects sustained as long as 5 years, but many of the better studies fail to find any long-term beneficial effect.[54] School educational programs may help to reinforce norms in those communities with more extensive tobacco control policies.

Conclusion

Prevention programs can reduce the number of adolescents who initiate tobacco use and proceed through the tobacco continuum. The combination of counter-advertising campaigns, taxation to increase price, advertisement control, and enforcement of sales-to-minors laws provide a strong assortment of measures that are closely associated to the decline observed in youth smoking initiation in the last decades.

References

1. World Health Organization: WHO report on the global tobacco epidemic, 2011: warning about the dangers of tobacco? Available from: http://www. WHO .int /

2. Levy DT, Chaloupka F, and Gitchell J: The Effects of Tobacco Control Policies on Smoking Rates: A Tobacco Control Scorecard, J Public Health Management Practice, 2004, 10(4), 338-353.

3. World Health Organization Child and adolescent health and development, overview of CAH. Adolescents: the sheer numbers. http :// www. who.int /child adolescent health/OVERVIEW/AHD/adh_sheer.htm (accessed 3 May 2006)

4. Myers MG, Brown SA. Smoking and health in substance abusing adolescents: a two year follow up. Pediatrics 1994; 93561–566.

5. Dwyer JH, Rieger Ndakorerwa GE, Semmer NK. et al: Low level cigarette smoking and longitudinal change in serum cholesterol among adolescents. The Berlin–Bremen Study. JAMA 1988; 2592857–2862.

6. Colby SM, Tiffany ST, Shiffman S. et al: Are adolescent smokers dependent on nicotine? A review of the evidence. Drug Alcohol Depend 2000, 59 (Suppl 1) S83–S95.

7. Thomas R. School based programmes for preventing

smoking. Cochrane Database Syst Rev 2002, 4CD001293

8. Sussman S, Lichtman K, Ritt A. et al: Effects of thirty-four adolescent tobacco use cessation and prevention trials on regular users of tobacco products. Subst Use Misuse 1999; 341469–1503.

9. Pierce JP, Gilpin E. How long will today's new adolescent smoker be addicted to cigarettes? Am J Public Health 1996, 86253–256.

10. Stanton WR, Lowe JB, Gillespie AM. Adolescents' experiences of smoking cessation. Drug Alcohol Depend 1996, 4363–70.

11. Wellman RJ, DiFranza JR, Savageau JA. et al: Short term patterns of early smoking acquisition. Tob Control 2004; 13251–257.

12. Ariza-Cardenal C, Nebot-Adell M. Factors associated with smoking progression among Spanish adolescents. Health Edu Res 2002, 17750–760.

13. Sargent JD, Mott LA, Stevens M. Predictors of smoking cessation in adolescents. Arch Pediatr Adolesc Med 1998, 152388–393.

14. Johnson JL, Bottorff JL, Moffat B. et al: Tobacco dependence: adolescents' perspectives on the need to smoke. Soc Sci Med 2003, 561481–1492.

15. DiFranza JR, Rigotti NA, McNeill AD. et al: Initial symptoms of nicotine dependence in adolescents. Tob Control 2000 9313–319.

16. O'Loughlin J, DiFranza J, Tyndale RF. et al: Nicotine-dependence symptoms are associated with smoking frequency in adolescents. Am J Prev Med 2003, 25219–225.

17. Giovino GA, Mirza SA, Samet JM, et al. Tobacco use in 3 billion individuals from 16 countries: an analysis of nationally representative cross-sectional household surveys. Lancet 2012; 380: 668-79.

18. Jha P and Peto R: Global Effects of Smoking, of Quitting, and of Taxing Tobacco, The New England Journal of Medicine, 2014; 370(1) : 60-68.

19. Lantz PM, Jacobson PD, Warner KE. et al Investing in youth tobacco control: a review of smoking prevention and control strategies. Tob Control 2000; 947–63.63

20. Backinger CL, McDonald P, Ossip-Klein DJ. et al Improving the future of youth smoking cessation. Am J Health Behav 2003; 27 (Suppl 2): S170–S184.S184

21. US Department of Health and Human Services Healthy people 2010; understanding and improving health. 2nd edn. Washington, DC: US Government Printing Office, 2000.

22. Centers for Disease Control and Prevention: Health effects of cigarette smoking. Available at :http: //www. cdc.gov/tobacco/data_statistics/fact_sheets/health_effects /effects_cig_smoking/index.htm (Accessed on October 01, 2014)

23. Salawu F, Danburam A, Isa B, Agbo J. Cigarette smoking habits among adolescents in northeast Nigeria. The Internet Journal of Epidemiology. 2009; 8(1).

24. Rosen JB, Sockrider M: Management of smoking cessation in adolescents, 2015.

25. American Lung Association. Second hand smoke Fact Sheet 2000. Available from: http /www .lungusa . org / tobacco/secondhand_factsheet99.html

26. ASH Fact Sheet on Tobacco and the developing world. 2009. Planned review date: Sep. 2013; 1-6. Available from: www.ash.org.uk.

27. WHO report on the global tobacco epidemic, 2013: enforcing bans on tobacco advertising, promotion and sponsorship. Geneva: World Health Organization, 2013.

28.WHO technical manual on tobacco tax administration. Geneva: World Health Organization, 2010.

29.International Agency for Research on Cancer. Effectiveness of tax and price policies for tobacco control: IARC handbook of cancer prevention, vol. 14. Lyon, France: IARC, 2011.

30. Jha P, Chaloupka FJ, Moore J, et al. Tobacco addiction: In: Jamison DT, Breman JG, Measham AR, et al., eds. Disease control priorities in developing countries. 2nd ed. Washington, DC: World Bank and Oxford University Press, 2006:869-86.

31. Kostova D, Ross H, Blecher E, Markowitz S. Is youth smoking responsive to cigarette prices? Evidence from low- and middle-income countries. Tob Control 2011; 20: 419-24.

32. Yürekli A, Sayginosoy Ö. Worldwide organized cigarette smuggling: an empirical analysis. Appl Econ 2010; 42: 545-61

33. Joossens L, Merriman D, Ross H, Raw M. How eliminating the global illicit cigarette trade would increase tax revenue and save lives. Paris: International Union against Tuberculosis and Lung Disease, 2009.

34. DiFranza JR, Wellman RJ, Sargent JD, Weitzman M, Hipple BJ, and Winickoff JP, "Tobacco promotion and the initiation of tobacco use: assessing the evidence for causality," Pediatrics,2006, 117(6), e1237–e1248.

35. Brown A and Moodie C, "The influence of tobacco marketing on adolescent smoking intentions via normative beliefs," Health Education Research, 2009, 24(4), 721–733.

36. Wellman RJ, Sugarman DB, DiFranza JR, and Winickoff JP, "The extent to which tobacco marketing and tobacco use in films contribute to children's use of tobacco: a meta-analysis," Archives of Pediatrics and Adolescent Medicine, 2006,160 (12), 1285–1296.

37. Wilson LM, Tang EA, Chander G, Hutton HE, Odelola OA, Elf JL, Heckman-Stoddard BM, Bass EB, Little EA, Haberl EB and Apelberg BJ, Impact of Tobacco Control Interventions on Smoking Initiation, Cessation, and Prevalence: A Systematic Review: Journal of Environmental and Public Health, 2012. Available from: http://dx.doi.org/10.1155/2012/961724

38. Federal Trade Commission. Cigarette report for 2011. Washington, DC: FTC, 2013 (http:// www. ftc. gov /os/2013/05/130521cigarettereport.pdf).

39. Wakefield MA, Hayes L, Durkin S, Borland R. Introduction effects of the Australian plain packaging policy on adult smokers: a cross-sectional study. BMJ Open 2013; 3:e003175.

40. Cancer Research UK. The answer is plain -campaign for plain cigarette packaging (http: //www. youtube.com/watch? eature=player_embedded &v=c_z-4S8iicc).

41. Hammond D. "Plain packaging" regulations for tobacco products: the impact of standardizing the color and design of cigarette packs. Salud Publica Mex 2010; 52: Suppl 2:S226-S232.

42. Jha P, Guindon E, Joseph RA, et al. A rational taxation system of bidis and cigarettes to reduce smoking deaths in India. Econ Polit Wkly 2011; 42: 44-51

43. Hammond, D, et al., "Impact of the graphic Canadian warning labels on adult smoking behavior," Tobacco Control 12(4): 391-395, December 2003.

44. Hammond, D, et al., "Effectiveness of Cigarette Warning Labels in informing smokers about the risks of smoking: Findings from the International Control Four Country Study," Tobacco Control 15 (Suppl III):19-25, June 2006

45. Health Canada, The health effects of tobacco and health warning messages on cigarette packages–survey of adults and adult smokers: Wave 9 Surveys, Prepared by Environics Research Group, January 2005. Hammond, D, "Health warnings on tobacco packages: summary of evidence and legal challenges," January 2008.

46. White V, Webster B, & Wakefield M, "Do graphic health warning labels have an impact on adolescents' smoking -related beliefs and behaviours?" Addiction 2008, 103(9):1562-71.

47. Vardavas CI, et al., "Adolescents perceived effectiveness of the proposed European graphic tobacco warning labels," European Journal of Public Health, 2009, 19(2):212-7.

48. Flemming T, Elvidge J. Youth health services literature review. A rapid review of: school based health services, community based youth specific health services & general practice health care for young people. Waitemata District Health Board; 2010. Available from: www.waitematadhb.govt.nz (Accessed Jun, 2013).

49. McPherson A. Adolescents in primary care. BMJ, 2005; 330(7489):465–7.

50. Scragg R, Glover M, Paynter J, et al. Association of parent and best friend smoking with stage of adolescent tobacco smoking. N Z Med J, 2010; 123(1326):77–87.

51. Simons-Morton BG, Farhat T. Recent findings on peer group influences on adolescent smoking. J Prim Prev, 2010; 31(4):191–208.

52. Guo H, Reeder AI, McGee R, Darling H. Adolescents' leisure activities, parental monitoring and cigarette smoking-a cross-sectional study. Subst Abuse Treat Prev Policy. 2011;6:12.

53. Lantz PM, Jacobson PD, Warner KE, Wasserman J, Pollack HA, Berson J, Ahlstrom A. Investing in youth tobacco control: a review of smoking prevention and control strategies. Tobacco Control. 2000; 9 :47–63.

54. Peterson AV, Kealey KA, Mann SL, Marek PM, Sarason IG. Hutchinson smoking prevention project: long-term randomized trial in school-based tobacco use prevention—results on smoking. Journal of the National Cancer Institute. 2000; 92: 1979–1991.

Case report

Coarctation of the aorta with persistent pulmonary hypertension

Mahmuda Hassan[1], Kona Chowdhury[2], Taslim Uddin Ahmed[3], Marium Begum[3], Ashraf Uddin Ahmed[3], Asif Zaman Tushar[4], Hamidur Rahman[5]

Abstract:

Coarctation of the aorta (CoAo) is the fifth most common congenital heart defect, accounting for 6–8% of live births with congenital heart disease, with an estimated incidence of 1 in 2,500 births1. The age at which people with CoAo are diagnosed depends on the severity of the condition. If the aortic coarctation is severe, it is usually diagnosed during infancy. A 7 month male baby was admitted at Ad-din Medical College and Hospital with the complaints of difficulty in breathing, lethargy, vomiting, and cyanosis with history of poor feeding. He had past history of transient cyanotic attack 3 to 4 times in his life which was resolved automatically at home. At the age of 3 months of his age he was admitted in other hospital for cough and cold and respiratory distress. X-ray chest and colour Doppler cofirmedthe case as CoAo.

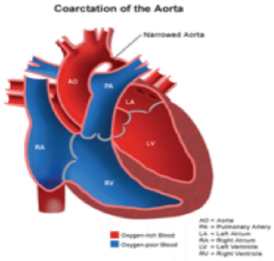
Key Words: Coarctation of the aorta (CoAo), Persistent Pulmonary Hypertension (PPHN).

Introduction

Coarctation of the aorta (CoAo) is the fifth most common congenital heart defect, accounting for 6–8% of live births with congenital heart disease, with an estimated incidence of 1 in 2,500 births[1]. It affects more male babies than female, with a reported male: female ratio between 1.27:1 and 1.74:1.[2,3] Older infants and children remain asymptomatic resulting in delayed diagnosis. In young children, CoAo may present with hypertension, and/or murmurs. The age at which people with CoAo are diagnosed depends on the severity of the condition. If the aortic coarctation is severe, it is usually diagnosed during infancy.

Etiology

The etiology of the discrete isthmic constriction of the aorta in patients with CoAo remains very much in dispute. Although familial cases have been reported[4,5] and association with various gene deletions described[6]. of blood flow.[7] Abnormal migration patterns of the developing aortic arch, and excessive distribution of Developmental theories have focused on abnormalities arterial duct-like tissue around the aortic isthmus[8] has also been proposed. But this mechanistic view do not reflect the widespread changes seen both in left heart structures (mitral valve abnormalities, bicuspid aortic valve) and upper body vascular structure (cerebral aneurysms) which commonly associated with CoAo. Changes induced by a gridlock mutationin the hey2 gene in the zebra fish lead to changes mimicking CoAo in this species.[6] Interestingly inducing up-regulation of vascular endothelial growth factor (VEGF) early in development is sufficient to suppress the gridlock phenotype and aortic abnormality in this model. VEGF plays a vital role in aortic development, acting as a chemo-attractant, stimulating angioblast migration toward the midline before formation of the aorta[9]. Indeed, targeted disruption of VEGF in mice leads to significant disruption of the developing aorta[10]. VEGF is also involved in stimulating generalized arterial differentiation through its effect on angioblast migration.



1. Associate Professor, Pediatrics, Ad-din Women's Medical College Hospital. Dhaka.
2. Assistant Professor, Pediatrics, Ad-din Women's Medical College Hospital. Dhaka.
3. Associate Professor, Pediatrics, Ad-din Women's Medical College Hospital. Dhaka.
4. Assistant Registrar. NICVD. Dhaka.
5. Professor and Head of the department, Pediatrics, Ad-din Medical College Hospital. Dhaka.

Correspondence : Mahmuda Hassan
e-mail : mahmudahasn@yahoo.com

Case Presentation and management

Presentation in infancy may vary from irritability, pale skin, sweating, respiratory distress, poor feeding, poor weight gain, cold feet and/or legs, diminished or absent pulses in the feet, blood pressure in the arms significantly greater than the blood pressure in the legs.

Present case was a 7 month baby boy admitted at Ad-din Medical College and Hospital with

Complaints of

1. difficulty in breathing
2. lethargy
3. vomiting,
4. cyanosis with history of poor feeding.

Past history: The child was delivered at term following an unremarkable pregnancy, uneventful neonatal period. At the age of 3 months of his age he was admitted in other hospital for cough and cold and respiratory distress. He had past history of transient cyanotic attack 3 to 4 times in his life which was resolved automatically at home.

On examination

1. temperature was 101 degree Fahrenheit
2. respiratory rate was 67/min with chest in drawing
3. heart rate was 110/ min and had a soft systolic murmur in the left sternal border
4. also had few rhonchi and crepitation in the lung fields.
5. His admission weight was 5kg. Weight for age was below the 3rd centile line, length was 61 cm. which is also below the 3rd centile line.
6. Blood pressure in upper limb was 110/80mm of Hg, in lower limb was 60/35 mm of Hg. with weak femoral pulse.

Provisionally diagnosed as a case of severe pneumonia with congenital heart disease.

Investigations

a) In complete blood picture, hemoglobin was 11.6 gm/dl, total white blood cell was 21000/ cu.mm with increased neutrophil count.

b) X ray chest shadowed cardiomegaly and multiple patchy opacity over both the lung fields.

c) Color Doppler ECHO done on 4th hospital day which showed left sided arch with coarctation of the aorta, intact intra atrial and intra-ventricular septum with normal coronary arteries. Left Ventricular Ejection Fraction (LVEF) 77%, Fractional Shortening (FS) 43%. Severe coarctation of the aorta noticed. Peak Pressure Gradient (PPG) 55 mm of Hg. Diameter of the aorta at the level of CoAo a was 3.5mm, mild TR noticed, PPR 44 mmHg, calculated Pulmonary Artery Systolic Pressure (PASP) 55 mm of Hg, severe left ventricular hypertrophy with hypertrophied IVS, moderate RVH ,

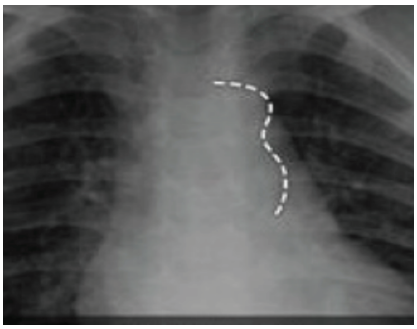
d) No patent ductus arteriosus (PDA) and evidence of severe pulmonary hypertension.

e) On admission SpO2 was 88% and maintained SpO2 > 95% with FiO2 1L/minute. Antibiotic was started as per protocol. Sildenafil has both pulmonary and systemic vascular relaxation effects was prescribed.

Paediatric cardiologist advised for urgent Balloon angioplasty for CoAo. His fever subsided and respiratory distress was resolved after treatment. Unfortunately the baby died at home while waiting for his surgical treatment 1 month after discharged from the hospital.

Discussion

CoAo is a congenital malformation that usually presents early in life and is often associated with congenital abnormal aortic valve. The mean survival for untreated patients is 35 years with a 25% survival rate beyond 50 years. The natural history of unrepaired coarctation of the aorta includes the development of systemic hypertension and subsequent morbidity and death from cardiovascular disease[11]. The age of diagnosis and correction is the most important factor for relief of hypertension and long-term survival[12]. Despite the fact that the coarctation of aorta appears more often in young males may present with hypertension, and/or murmurs resulting from collaterals or associated heart defects[11]. The age at which people with coarctation of the aorta are diagnosed depends on the severity of the condition. If the aortic coarctation is severe, it is usually diagnosed during infancy. Diagnosis is usually based on clinical suspicion and physical findings. It includes blood pressure difference between the upper and lower extremities, pulse delay and systolic murmur over the thoracic spines due to collateral circulation. Other manifestations can include systolic ejection sound and/or murmur and neurological complaints, as well as persistent pulmonary hypertension.



Plain X ray chest shows figure of 3 sign contour abnormality of the aorta, inferior rib notching also called

Roesler sign is due to secondary to dilated inter-costal collateral vessels which form as a way to bypass the coarctation and supply the descending aorta, the dilated and tortuous vessels erode the inferior margins of the ribs, resulting in notching but our case did not show any such signs on x ray because it is seen only in long standing cases, and therefore not seen in infancy (unusual in patients <5 years of age)[13] seen in 70% of cases presenting at older children or adults.

A reported 7 month female infant was presented with aortic stenosis, preductal coarctation, and pulmonary hypertension underwent operation. Intra-operative lung biopsy revealed marked medial hypertrophy of the pulmonary arterioles. This histopathology is compatible with persistent pulmonary hypertension in the newborn. She was alive and about 5 years after the operation pulmonary hypertension remained.[14]

Preoperative treatment consists of treatment of hypertension can be effectively treated using beta-blockers.15 The goal should be to reduce upper extremity hypertension, but remember that vigorous attempts to achieve normal upper extremity blood pressure (BP) may result in inadequate lower-body perfusion. Beta-blocker therapy prior to surgery may reduce the severity of postoperative hypertension, although most patients with preoperative hypertension require at least transient postoperative therapy. Relieving the aortic obstruction promptly rather that attempting to treat hypertension with antihypertensive medications is better. Sildenafil is a PDE5 inhibitor, its mechanism of action is to augment nitric oxide-cGMP signaling by inhibiting the degradation of cGMP. Increased cGMP results in pulmonary vascular relaxation.[16]

Intravenous continuous PGI2 is also effective in treating older children with primary pulmonary hypertension. PGI2works by increasing cAMP, and iNO works by increasing cGMP. Prostacyclins also causes vasodilation in the pulmonary vasculature, leading to decreased pulmonary pressures and improved cardiac output.[17]

Proper therapy for hypertension, endocarditis prophylaxis and corrective treatment for coarctation lesions with a high gradient. Indications for intervention in children include heart failure, a peak instantaneous pressure gradient across the coarctation>20mmHg, and/or radiologic detection of collateral circulation. Systemic hypertension, accelerated coronary heart disease, stroke, aortic dissection, and heart failure are common complications in adults who have not undergone correction for their coarctation or were operated later in life. Coarctation repair after early child-hood does not prevent persistence or late recurrence of systemic hypertension. As a result, correction of coarctation should be performed in infancy or early childhood to prevent the development of chronic systemichypertension13. In this case report, our patient was asymptomatic and his problem was diagnosed after hospital admission due to other clinical illness.

Death in these patients is usually due to heart failure, coronary artery disease, aortic rupture/dissection, concomitant aortic valve disease, infective endarteritis, or cerebral hemorrhage.

Conclusion

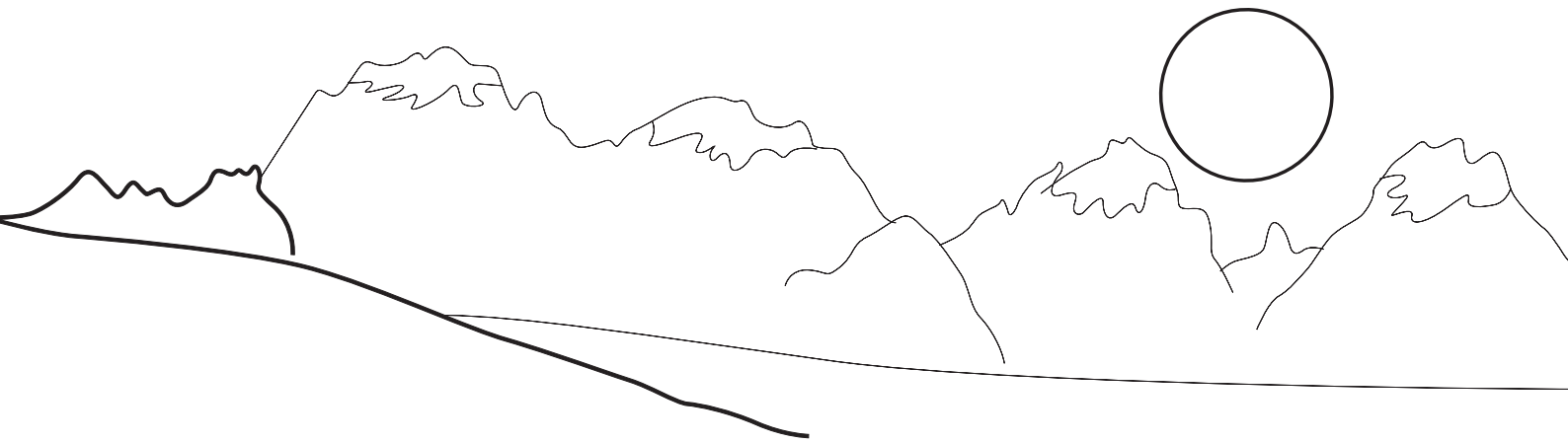
Early diagnosis and timely intervention is required for better the prognosis. If CoAo is severe and diagnosed is delayed in childhood or adulthood prognosis is guarded. To avoid late diagnosis and prevent complications, through physical examination including routine measurement of blood pressure and echocardiogram of suspected cases are advised.

References

1. Anderson R, Baker EJ, Macartney FJ, Rigby ML, Shinebourne EA, Tynan M eds. Paediatric cardiology. 2nd Ed. Churchill Livingstone, London 2002.
2. Campbell M, Polani PE. Aetiology of coarctation of aorta. Lancet,1961; 1: 463–467.
3. Fyler DC BD, Hellenbrand WC, Cohn HE. Report on the New England Regional Infant Cardiac Program. Pediatrics, 1980; 65:375–461.
4. Sehested J. Coarctation of the aorta in monozygotic twins. Br Heart J, 1982; 47: 619–620.
5. 5. Wessels MW, Berger RM, Frohn-Mulder IM et al. Autosomal dominant inheritance of left ventricular outflow tract obstruction. Part A. Am J Med Genet, 2005; 134A: 171–179.
6. 6. Peterson RT, Shaw SY, Peterson TA et al. Chemical suppression of a genetic mutation in a zebra fish model of aortic coarctation. Nature Biotechnol, 2004; 22: 595–599.
7. Rudolph AM, Spitznas U, Heymann MA. Hemodynamic considerations in development of narrowing of aorta. Am J Cardiol, 1972; 30: 514–525.
8. Russell GA, Berry PJ, Watterson K, Dhasmana JP, Wisheart JD. Patterns of ductal tissue in coarctation of the aorta in the first three months of life. J Thoracic CardiovascSurg, 1991; 102: 596–601.
9. Cleaver O, Krieg PA. VEGF mediates angioblast migration during development of the dorsal aorta in Xenopus. Development, 1998; 125: 3905–3914.
10. Carmeliet P, Ferreira V, Breier G et al. Abnormal blood vessel development and lethality in embryos lacking a single VEGF allele. Nature, 1996; 380: 435–439.
11. M. Campbell, "Natural history of coarctation of the aorta," British Heart Journal .1970;32(5): 633-640.
12. M. H. J. Brouwer, M. E. Erasmus, T. Ebels, and A. Eijgelaar,

"Influence of age on survival, late hypertension, and re-coarctation in elective aortic coarctation repair: including long-term results after elective aortic coarctation repair with a follow-up from 25 to 44 years," Journal of Thoracic and CardiovascularSurgery, 1994; 108(3): 525–531.

13. Higgins CB. Radiography of congenital heart disease. In: Webb WR, Higgins CB (eds). Thoracic imaging: pulmonary and cardiovascular radiology (pp742-767). Lippincott Williams and Wilkins. (2011).
14. Aota M1, Nomoto S, Yamaki S, Ban T Pulmonary hypertension caused by medial hypertrophy associated with aortic stenosis and preductalcoarctation.Ann Thorac Surg. 1997 ;64(1):244-7.
15. Lopez-Sendon J, Swedberg K, McMurray J, et al. Expert consensus document on beta-adrenergic receptor blockers. Eur Heart J. 2004 Aug. 25(15):1341-62.
16. Bharani A, Mathew V, Sahu A, Lunia B. The efficacy and tolerability of sildenafil in patients with moderate-to-severe pulmonary hypertension. Indian Heart J 2003;55(1):55–59.
17. Kelly LK, Porta NFM, Goodman DM, Carroll CL, Steinhorn RH. Inhaled prostacyclin for term infants with persistent pulmonary hypertension refractory to inhaled nitric oxide. J Pediatr. 2002;141:830–832.



We grow through your faith

Ad-din
Pharmaceuticals Ltd.
2 Bara Maghbazar, Dhaka-1217, Phone: 880-2-9353391-3

গর্ভকালীন সময়ে
২৪ ঘন্টা আপনার পাশে আমরা

২৪ ঘন্টা এ্যাম্বুলেন্স সেবা

ঢাকা মহানগরীর মধ্যে মাত্র **২৬০** টাকা

ফোন করুন **১০৬১০, ০১৭১৩-৪৮৮৪১১, ০১৭১৩-৪৮৮৪১২**

আদ্-দ্বীন মেডিকেল কলেজ হাসপাতাল
২ বড় মগবাজার, ঢাকা-১২১৭। ফোন: ৯৩৫৩৩৯১-৩

Ad-din
women's medical college
2 Bara Moghbazar, Dhaka-1217, Phone : +880-2-9362921, 9362926
Fax : 8317307, E-mail : awmc@ad-din.org, Website : www.ad-din.org