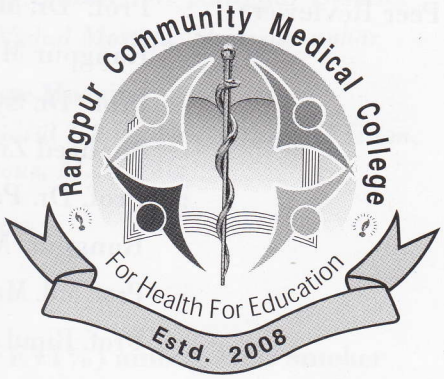
RANGPUR COMMUNITY MEDICAL COLLEGE

JOURNAL

VOL 1, NO 1, JULY 2011

AN OFFICIAL PUBLICATION OF
RANGPUR COMMUNITY MEDICAL COLLEGE, RANGPUR



RCMC Journal

Volume 1 Number 1 July 2011
An Official Publication of
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Rangpur Community Medical College Journal

Vol. 1 No. 1 July 2011

Editorial Board

Editorial Policy

Rangpur Community Medical College Journal, the official publication of the Rangpur Community Medical College, is a peer reviewed journal. It is published twice in a year in the month of January and July. Rangpur Community Medical College Journal publishes original articles, reviews, case report, editorials & other information relevant to medical science and related fields. Further details on the kinds of manuscripts that are considered for publication are given in "information for Authors." Manuscripts are accepted for publication with the understanding that their contents, all or in part, have not been published elsewhere and will not be published elsewhere. The RCMCJ follows guidelines on editorial independence produced by the World Association of Medical Editors (www.wame.org) and the code on good publication practice produced by the Committee on Publication Ethics (www.publicationethics.org). RCMCJ or the editorial Board accepts no responsibility for any statement published in the journal. Statement expressed in Rangpur Community Medical College Journal reflect the views of the authors and not necessarily the policies of journal. The information contained herein should never be used as a substitute for clinical judgment.

Rangpur Community Medical College Journal

Vol. 1 No. 1 July 2011

Contents

Editorial

Importance of a Medical Journal

To gain knowledge is an endless journey. Globally in this era of mass communication gaining knowledge and exchange of information is not only in our feast but in our tip of fingers. In spite of that journal is still then not only a prerequisite academic document for the establishment of academic institution.

It reflects the continuous academic as well as research activities going on in that institution. Regarding this we have achieved our goal to publish the first issue of Rangpur Community Medical College journal (RCMCJ). As this is the very first issue there may be unintentional errors into this text which cannot be ruled out.

My gratefulness and appreciation to all who touched any corner of this publication, give logistic support and specially to those who worked hard but with great enthusiasm. By publishing journal we want to encourage, support, potentiate the academic and research activities by the doctors in this institution. Subsequently this will lead to a tradition of a broad base research field centering this institution. These activities will be helpful in improving the learning, teaching and evaluating the educational programs. A medical journal publish scientific articles that are helpful for health professional because they are mostly evidence based, problem based in the context of our community and thus help to make policies to solve those.

The readers and students gain updated information, references from journal. A group of Medical personnel is very much attached to spend time in gathering knowledge from different journals. Every day a number of biomedical periodicals are published and disseminated worldwide.

We hope the doctor's community of local and abroad can share different views through these. We invite all medical professionals to enrich our college journal RCMCJ by submitting these original articles, review articles, case report etc. I am confident that this journal will draw a good impact on the overall academic environment in this institution.

Editor-in-Chief

Prof. Dr. Afruza Bulbul Akhtar

Rangpur Community Medical College Journal

Original Article

Antiandrogenic Effects of Finasteride on Testosterone-induced Benign Prostatic Hyperplasia

Shamsun-nahar,[1] Md. Motahar Hossain,[2] Shamim Ara,[3] Neaz Ahamed,[4] Afruza Bulbul Akhtar,[5] Rawshan Ara Begum[6]

Abstract :

Background: *Benign Prostatic Hyperplasia (BPH) is an adenoma affecting the prostate gland. Aging and dihydrotestosterone are two factors responsible for BPH. Finasteride prevents the conversion of testosterone to its active form dihydrotestosterone. For this, different doses of finasteride was used to see its inhibitory effect on body weight, prostate weight in male rats morphologically on testosterone induced BPH.* ***Materials and Methods:*** *This experimental study was carried out in the Dept. of Anatomy, Dhaka Medical College, Dhaka during the period from July 2005 to December 2006. The experiment was carried out on total number of 48 healthy young Long Evans male rats within the age range of 8-10 weeks weighting between 180-200 gms. The rats were divided into four groups. Group-A (control) receiving no drug only vehicle (olive oil) and experimental Group-B receiving Testosterone Propionate (TP), Group-C TP+Finasteride (4 mg), Group-D TP+ Finasteride (8 mg).* ***Results:*** *There were significant increase in the weight of prostate in testosterone-treated groups as compared to control group ($p<0.001$). But in testosterone plus finasteride treated groups there were significant reduction in weight of the prostate as compared to testosterone treated group.* ***Conclusion:*** *From the present study it may be concluded that finasteride have varying degree of inhibitory effect on prostate which is dose dependent. So there is need for further studies with larger sample, using different doses for different duration.*

Keyword: prostate, finasteride, testosterone

RCMCJ 2011; 1(1): 2-6

Introduction:

The prostate is a fibro-muscular gland which surrounds the prostatic urethra. It is traversed by the urethra and ejaculatory ducts. The prostate gland is lobulated but can only be distinguished in the fetal gland. The zonal anatomy of the glandular part is clinically important because benign prostatic hyperplasia affects the transition zone and carcinoma arises in the peripheral zone.[1] It is a composite organ made up of several glandular and non- glandular components.[2] The gland weights approximately 1 gm at birth, increases to about 4 gm prior to puberty. At puberty, between the ages of 14-18 years the gland becomes double in size and then grows to about 20gm by the age 20 years. But there is no further change for 20 to 30 years.[3] After the third decade, the size remains unaltered until 45-50 years. Then the gland tends to develop benign prostatic hyperplasia which is related with aging and hormone dihydrotestosterone and results in a mean weight of about 60 gm by age 70.[1] Finasteride is a specific inhibitor of 5-alpha

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reductase inhibitor that converts testesterone to dihydrotestesterone. Finasteride – the androgen suppressive drug with acceptable tolerance. Glenn et al[4] studied with Finasteride to evaluate the safety and efficacy of finasteride. Administration of this drug for short period's results in decreased serum dihydrotestosterone concentrations, a reduction in the size of the prostate, and improvement in urinary-flow rate[5].

With this background, we designed to carry out this study to evaluate the inhibitory effect of finasteride on testosterone–induced Benign Prostatic Hyperplasia in male rats.

Materials and Methods:

This experimental study was carried out on a total number of 48 healthy young Long Evans male rats within the age range of 8-10 weeks weighting between 180-200 gms in the Department of Anatomy, Dhaka Medical College from July 2005 to December 2006. Permission was taken from the ethical committee of DMC. Results were expressed as mean ± SD. 95% significance level ($p<0.05$) was considered statistically significant. Analysis were done by SPSS using the relevant tests of significance (paired't' test, one way anova).

Finasteride was used in the present study in a dose of 40 mg/kg body weight and 50 mg/kg body weight and was administered subcutaneously as described by Wright et al[5] and McGinley JI et al.[6] The drug was induced for 14 days and the animals were sacrificed by cervical dislocation under ether anaesthesia. After sacrifice the abdomen was opened and prostate, testes and seminal vesicles were dissected out. From each group, histological studies were carried out on 12 (in each group) selected specimens. The ventral prostate was fixed in 10% formol saline solution. The tissues were processed following histological procedure.

Parameters:

The following parameters were studied for each animal & comparative studies were made among different group of animals.

i) Determination of body weight of the animals at the onset of the experiment & on the day of sacrifice.

ii) Determination of the weight of the prostate, testes & seminal vesicles.

Grouping of the animals:

The experiment was carried out on 48 Long Evans rats. The rats were divided into four groups as Group-A (Control), Group-B (Testosterone propionate treated), Group-C (Finasteride 4mg + Testosterone Propionate treated), and Group-D (Finasteride 8mg + Testosterone Propionate treated). Each group comprised of 12 (twelve) rats and was randomly selected (Table-I).

Results:

The mean initial body weight of the rats of group A was 196.67 ± 3.892, group B was 196.67 ± 6.155, group C was 197.08 ± 6.57 and group D was 1933.33 ± 6.513 gm without having significant difference ($p>0.05$) among the groups (Table-II, Fig-I).

The mean final body weight of the rats of group A was 206.67 ± 6.853, group B was 202.50 ± 5.000, group C was 203.00 ± 5.721 and group D was 202.08 ± 6.557 gm without having any significant difference ($p>0.05$) among the groups (Table-II, Fig -I).

The mean weight of the prostate of the rats of group A was 476.75 ± 9.196, group B was 637.92 ± 18.520, group C was 378.75 ± 8.001 and group D was 173.50 ± 6.289 mg having significant difference between the groups ($p<0.001$) (Fig II, Table III).

Table: I

Grouping of rats, doses of drugs, and vehicle, duration of treatment and sacrifice schedule of the experiment.

Groups (n)	Feeding status	Dose of drugs (mg/kg) body wt or olive oil as vehicle	Route of administration	Duration of treatment (days)	Day of sacrifice (15th days)
A (Control) 12	Normal food + water	Vehicle (olive oil) 0.2 ml	Subcutaneous	14	15
B (Experimental control) 12	Normal food + water	Testosterone propionate 200µg	Subcutaneous	14	15
C (Experimental) 12	Normal food + water	Testosterone propionate 200µg + Finasteride 4mg	Subcutaneous	14	15
D (Experimental) 12	Normal food + water	Testosterone propionate 200µg + Finasteride 8mg	Subcutaneous	14	15

Table: II

Comparison of initial and final body weight of the rats of different groups

Groups	Initial (Mean ± SD) (Range)	Final (Mean ± SD) (Range)	p Value
A	196.67 ± 3.892 190 - 200	206.67 ± 6.853 200 - 220	> .05
B	196.67 ± 6.155 190 - 205	202.50 ± 5.00 195 - 205	> .05
C	197.08 ± 6.557 185 - 205	203 ± 5.721 195 - 210	> .05
D	195.94 ± 5.894 180 - 200	202.08 ± 6.557 195 - 205	> .05

Statistical analysis was done by paired 't' test

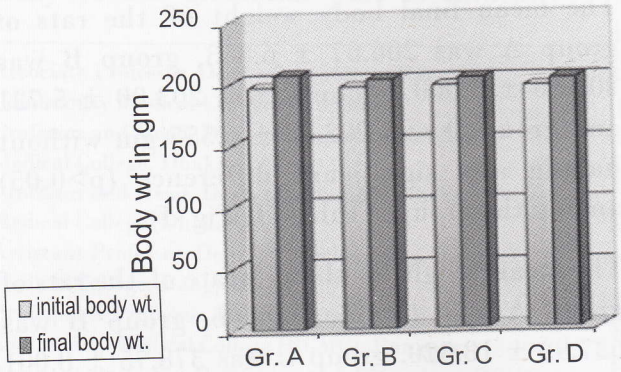

Fig I - Initial and final body weight (gm) of rats of different groups

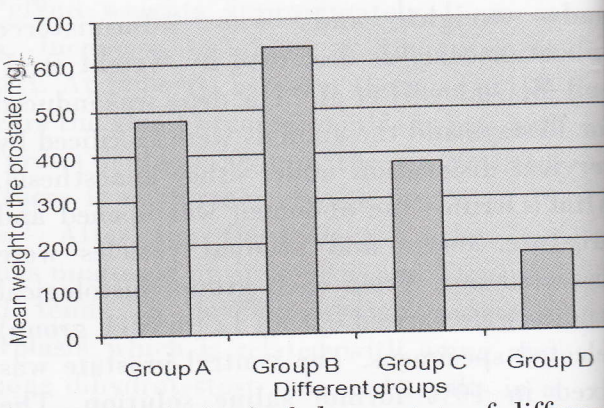

Fig II -Weight (mg) of the prostate of differen groups of rats

Table III

Comparison of weight of the prostate between diffierent groups

Weight of the prostate (mg)

Group	Mean ± SD	Range
A	476.75 ± 9.196	465 - 491
B	637.92 ± 18.520	600 - 665
C	378.75 ± 8.001	370 - 390
C	73.50 ± 6.289	165 - 182
		p - Value
Gr A vs B		< .001
Gr A vs C		< .001
Gr A vs D		< .001
Gr B vs C		< .001
Gr B vs D		< .001
Gr C vs D		< .001

Statistical analysis to determine the significance between groups compared through one-way ANOVA.

Discussion:

Finasteride is one of the new class of drug 5-alpha reductase inhibitor that are potentially useful in treating benign prostatic hyperplasia.[5] It slows the conversion of testosterone to dihydrotestosterone. The present study was an attempt to evaluate the effect of finasteride at two different doses on androgen induced prostatic hyperplasia in experimental rats. The average body weight gain in all groups of rats treated with testosterone plus finasteride has no significant effect on general metabolism of animals of having normal hormonal status. So there was no significant difference in body weight gain in control and experimental groups. The result of present findings was compatible with the results of Fleshner and Trechtenberg[7], Begum.[8]

Weight of the prostate, testes and seminal vesicle increased significantly in the testosterone-treated rats compared to control rats. There are three basic cellular responses that androgens affect within androgen–dependent prostatic glandular cells. These include stimulation of prostatic secretion, cell proliferation and inhibition of prostatic cell death[3,9]. Testosterone is converted to dihydrotestosterone within the prostate, which is the active intracellular androgen.

Fleshner in 1992[7], reported that decrease in weight of the prostate in adult male rats treated with finasteride at 0.15mg/kg. Prostate weight varied consistently with intraprostatic dihydrotestosterone and testosterone concentration. Within the prostate, dihydrotestosterone is 2.4 times as potent as testosterone in maintaining prostatic weight.[5] McGinley et al[6] in 1992 also reported that there was significant decrease in prostate weight in a dose of 25mg/kg and 50 mg/kg/day, with no further decrease at higher doses. So a maximum threshold of response was achieved with finasteride at a dose of 50 mg/kg/day. Peters and Walsh[10] established that androgen deprivation by anti-androgens that prevent the production of testosterone in the testes leads to a significant reduction in prostate volume. The mechanism of reduction in prostate weight is due to the inhibitory action of finasteride to inhibit 5 -reductase enzyme. Wright et al.[5] established that finasteride reducing gross prostatic weight by the process of atrophy and apoptosis of the ventral prostate of rats. In the present study, weight of the prostate in both the testosterone plus finasteride treated groups were less as compared to those rats treated with testosterone propionate. However, decrease in prostatic weight in Group-D (testosterone plus finasteride 8mg treated) was more than Group-C (treated with testosterone plus finasteride 4mg). There was 1.75-fold and 4-fold decrease in prostate weight in Group-C

and Group-D, when compared to testosterone propionate treated rats (Group-B). These result proposed that the reduction in weight of the prostate by finasteride is dose dependent, i.e. with higher dose of finasteride there more decrease in prostatic weight.

Conclusion:

Comparative study of finasteride with other 5á-reductase inhibitor is necessary. The study of hormone profile and studies with larger samples with different doses and duration are recommended.

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Original Article

Study of Thyroid Volume In Urban and Rural School Going Children of Rangpur District

Rawshan Ara Begum,[1] Md. Abdul Hakim,[2] M.A. Bari,[3] MMA Wadud Mostofa,[4] Shamsun-nahar[5]

Abstract :

Back ground: *Altered thyroid functions are associated with variation in thyroid volume. Measurement of thyroid volume in rural and urban school going children may give an idea about iodized salt intake and also helps to develop awareness about goiter.* ***Objectives:*** *This study was carried out to assess thyroid volume in urban and rural school going children.* ***Methods:*** *This cross sectional study was carried out in the department of physiology, Rangpur Medical College, from 1st July 2007 to 30th June 2008. Study was conducted on a total number of hundred urban (n=50) and rural (n=50) school going children, both girls and boys, age ranging from 10 to 15 years. Sampling was done by random cluster sampling method Thyroid volumes were measured by ultrasonography. History of iodized salt intake was taken and presence of iodine in salt was tested by the rapid iodine spot test.* ***Results:*** *The urban school going children, the volume of thyroid gland were within the normal reference value. Among the rural school going children (n=50), the volume of thyroid gland were above the mean reference value in 20 children & significant difference observed between two groups. The mean thyroid volume of rural school-going children was significantly higher than the urban school-going children (p< 0.001).* ***Conclusion:*** *From this study it can be concluded that measurement of thyroid volume in school going children gives us information about iodine status of a population.*

Key words: Thyroid volume, iodized salt

RCMCJ 2011; 1(1): 7-12

Introduction:

Thyroid gland enlarges as an adaptation to normalize inadequate thyroid hormones levels, a reaction mediated by thyrotropin (TSH) stimulation. During this adaptation, deviation in thyroid hormones levels may occur, ranging from compensated hypothyroidism to primary hypothyroidism in respect to the severity of iodine deficiency.[1]

Any enlarged thyroid that is palpable and or visible is defined as goiter. Prevalence of goiter in school-going children is an important indicator of iodine deficiency disorders in a population.[2,3] Low iodine intake has wide range of adverse effects on health. These effects have great impact during the period of rapid growth & development in the children.[4] If the physiological requirement of iodine is not fulfilled, then thyroid functions abnormalities can result.[5]

Iodine deficiency is a global public health problem and is the main cause of preventable mental retardation. At least two billion people in the world were suffering from inadequate iodine nutrition. Two hundred-eighty five million school-aged children from above

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mentioned population were suffering from same problem.[6-9] Thyroid volume was larger in rural school-going children than the urban school-going children.[8,10-14] Mild iodine deficiency disorder was treated by 18 month of universal salt iodization program in china, which reduced incidence from 18% to 5-9%. In those population mean thyroid size decreased 56% from base line and 29% remain goitrous in spite of universal salt iodization program[15]. Bangladesh is a developing country, majority of the people are poor & illiterate. They are ignorant about thyroid disorders. School-going children aged 10-15 years have increased iodine demand for physiological need. If this is not fulfilled properly, thyroid disorders i.e. sub-clinical hypothyroidism manifested by enlarged thyroid gland, increased serum TSH level & low or normal serum thyroid hormones levels will occur.

In these situations their school performances should be below standard. Early recognition of sub-clinical hypothyroidism of the school-going children aged 10-15 years should be therefore important for prevention of the hazards of thyroid disorders. But no such study yet was under taken to observe the relationship between thyroid volumes with iodized salt in school going children and rural school going children in Rangpur District.

So this type of work will be helpful to assess the thyroid function status of our school-going children as well as to adapt appropriate measure to prevent this deficient condition that may contribute in building a wise nation.

Methods:

This cross sectional study was carried out in the Department of Physiology, Rangpur Medical College, between July 2007 and June 2008. Hundred apparently healthy children aged 10 to 15 years were taken. Protocol of this study was approved by ethical committee of this institution. List of school in urban and rural area was collected, numbering was done. Then from these schools, selection of school was done by using random table. From these numbers of student, lottery was done, of them fifty were from urban school & taken as control group (Group A) whereas fifty were taken from rural school & taken as study group (Group B). All the children of both groups were the residents of different areas of Rangpur districts. Children with any other diseases were excluded from the study.

After selection, all the subjects were briefed about the objectives and benefits of the study to ensure their voluntary participation. Informed written consent was taken from each subject and from their guardian prior to the study. After selection, all the subjects were asked to attend the department of Physiology, Rangpur Medical College. Thyroid gland was examined by physical inspection and thyroid ultrasonography as per WHO criteria.[19] History of taking iodized salt was taken. All children enrolled for the study were asked to bring a teaspoon of salt which was tested for iodine content by the rapid iodine spot test. The change or unchanged in colour of the salt after the addition of a drop of starch solution was matched with the colour given on the test kit.

Thyroid volume was measured by ultrasonography in center for nuclear medicine and ultrasound, Rangpur. Study was done using a high resolution transducer 75 MHz probe in a real time ultrasound machine. The length, width and depth of each thyroid lobe were measured. Sum of two lobes gave the volume of the thyroid gland in ml. Length x width x depth x 0.479 = volume in ml. Results were compared with the reference

value recommended by WHO and the international council for control of iodine deficiency disorder[13].

Statistical analysis was done using SPSS windows package version 12. The comparisons between two groups were done by unpaired 't' test.

Results :

Thyroid volume of urban and rural school-going children of different age group are as follows (figure - I and Table - I). There was significant difference observed betweeen urban and rural school going children in every age group (p< 0. 001).

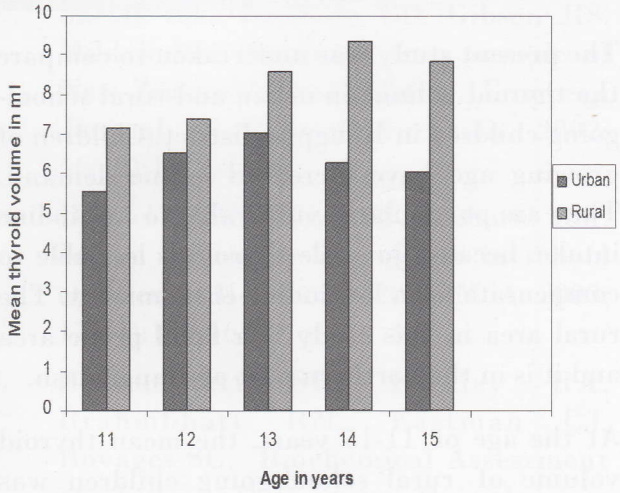

Fig-I: Bar diagram showing the thyroid volume of urban and rural children at different age

Table: 1

Thyroid volume of urban and rural school-going children.

School-going children				
Age In years	Urban Thyroid volume Mean ± SE	Rural Thyroid volume Mean ± SE	Value of "t"	Value of "p"
11(n=8)	5.55± 0.17078 (n=4)	7.17 ± 0.15478 (n=4)	7.05	p< 0.001***
12(n=16)	6.51± 0.26851 (n=10)	7.40 ± 0.17701 (n=6)	2.366	p < 0.05*
13 (n=33)	7.06± 0.17924 (n=17)	8.60 ± 0.16632 (n=16)	6.251	p < 0.001***
14 (n=23)	6.26± 0.2625 (n=10)	9.357 ± 0.30323 (n=13)	7.326	p< 0.001***
15 (n=20)	6.05± 0.24159 (n=9)	8.8364± 0.34226 (n=11)	6.350	p< 0.001***

"t " = unpaired "t" test * Significant ***highly significant

Table II

Iodized salt status in urban and rural area of Rangpur district.

Area	Presence of iodine in cooking salt No (%)	Absence of iodine in cooking salt No (%)	Total No (%)
Rural	18 (40%)	27 (60%)	45 (100%)
Urban	45 (90%)	5 (10%)	50 (100%)

Fourty five cooking salt sample were collected from rural school going children for presence of iodine. Out of 45 salt sample, only 18 (40%) salt sample were iodinized and 27 (60%) were non-iodinized. Fifty salt sample were collected from urban school going children for presence of iodine. Out of 50 salt sample, 45 (90%) salt sample were iodinized and only 5 (10%) were non-iodinized (Table II).

Discussion :

The present study was undertaken to compare the thyroid volume in urban and rural school-going children in Rangpur district. Children of growing age have increased iodine demand. They are particularly vulnerable to less iodine intake, because juvenile thyroid is less able to compensate for a low iodine environment. The rural area in this study is a flood prone area and it is in the northern part of Bangladesh.

At the age of 11-15 years, the mean thyroid volume of rural school-going children was significantly higher than the urban school-going children ($p<0.01$).

In this study this may be due to insufficient iodine intake by rural school-going children, which may cause lower levels of thyroid hormones in the circulation of rural children. The lower serum thyroid hormones level trigger the release of excess TSH, this excess TSH increases the number and size of the thyroid follicular cells which in turn increases the volume of the thyroid gland. Briel et al,[13] Fleury et al,[16] Sebotsa et al[17] and Wiersinga et al[18] have got similar finding.

Brahmbhatt et al[19] and Misra et al[20] also observed high goiter prevalence in rural children was due to inadequate iodized salt consumption. In spite of Universal Salt Iodization (USI) program, goiter prevalence was more in rural children than urban. As Chandra et al[3] observed that it was due to environmental factors other than dietary iodine deficiency.

Lack of iodine in drinking water, along with other goitrogen is probably the cause of mean thyroid volume difference between urban and rural school-going children as suggested by Brahmbhatt et al[19].

Brahmbhatt et al,[6] Lisbaa and Gross[21] observed high prevalence of goiter in rural school-going children in spite of Universal Salt Iodization (USI) program is due to under nutrition and bacterial pollution of drinking water. Lombardi et al[22] suggested that exposure to mild to moderate iodine deficiency in childhood causes a subtle enlargement of the thyroid gland in the juvenile population that might persist after correction of iodine deficiency.

In light of above discussions, it may be concluded that increased thyroid volume in rural school-going children in this study may be due to less iodine intake. They also give the history of taking goitrogenic substances like cabbage, turnip. In the present study, sub clinical hypothyroidism in rural children is most likely due to iodine deficiency as there is indirect evidence of less intake of iodized salt. Present study was conducted in rural as well as urban area. This rural area is a flood prone area. This study indicates that thyroid status must be improved by Universal Salt Iodization program.

Children are vulnerable to low iodine intake. If the demand of iodine in growing age is not fulfilled properly then thyroid disorders can take place. So the present study was designed to measure thyroid volume in urban and rural school-going children. The study was carried out in vulnerable rural area of Rangpur district.

The mean thyroid volume of rural school-going children was significantly higher than that of urban school-going children. There was no normal reference volume for thyroid gland in Bangladeshi children. All the thyroid volumes in urban and rural school-going children were below the upper normal limit as mentioned by WHO reference.

Conclusion :

From the present study it is difficult to draw any direct conclusion regarding etiology of such condition but from indirect evidence as discussed earlier it may be concluded that sub-clinical hypothyroidism in rural school-going children is common than the urban school-going children, due to less iodine intake. Use fullness of iodine in the development of normal physio-psychological function is not well informed to rural people where the study was conducted. Again economical constrain also play a pivotal role for consumption of non-iodized salt by the rural people. So, the role and importance of iodine in the physio-psychological development should be published more vigorously in mass media for better awareness. Iodized cooking salt may be supplied to such a goiter prone area at a subsidized rate to improve the sub clinical goiter prevalence. Use of iodized salt is encouraged to overcome the situation observed in the group studied.

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Original Article

Pattern of Poisonous Snake bite in Rangpur Medical College

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Abstract:

Background: *Snakebite is one of the leading causes of unnatural death in Bangladesh affecting primarily the people of rural areas.* ***Objectives:*** *To see the types of snake, incidence of envenomation and mortality rate of snake bite in Rangpur, a northern district of Bangladesh.* ***Methods:*** *A cross sectional study carried out in department of Medicine of Rangpur Medical College Hospital during the period of 1st June 2010 to 28th February 2011.* ***Result:*** *A total number of 111 patients of snake bite with age ranged from 18 years to 80 of both sexes were studied, of them male were 69 (62.16%) and female were 42 (37.84%). Among the study population most were farmer 35 (31.53%) and house wife 35 (31.53%), and least are snake charmer 01 (0.90%). The study revealed that 90.09% (n=100) of the snake bite did not show signs of envenomation whereas envenomation occurred in 9.91% (n=11) and most of the venomous bite were by krait (77.78%) and cobra (22.23 %). The mortality rates among the total study population were found 5.71% while in envenomated patient it was 54.55%.* ***Conclusion:*** *Snake bite is a result of an untoward accidental interaction between a snake and a human victim. Proper identification of envenomated patient by doctors is necessary to provide correct treatment to victims of snake bite, avoiding unnecessary suffering to the patient, and over prescription of antivenom, which may eventually cause severe untoward effects.*

Key words: poisonous, snake bite, krait

RCMCJ 2011; 1(1): 13-18

Introduction:

There are about 2500 species of snake in the world, among them 250 are poisonous. In Bangladesh among the 82 species of snake 28 are venomous, 12 species of them are sea snake.[1] Venomous snakes of the world belong to the families Viperidae (sub family Viperinae: Old world vipers; sub family Crotalinae: new world and Asian pit vipers), Elapidae (including cobras, kraits, coral snakes and all Australian venomous snakes), Hydrophiidae (sea snakes), Atractaspididae (burrowing asps), and Colubridae (a large family, of which most species are non venomous and only a few are dangerously toxic to humans).[2] There are 5 medically important groups of snake in our country, these are-cobra, krait, Russell's viper, green pit viper and sea snake.

Among this majority of venomous bites in our country are cobras and kraits. They are mainly neurotoxic, and respiratory failure is the main cause of death following envenomation[1]. Snake usually lives in the paddy field, river, hills, roots of the tree, rat hole etc. Snakes are docile in nature, they are carnivorous they eat frog, rats etc.[3] They bite defensively or when agitated.

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All the snake bites do not produce sign, symptoms, only the bites by poisonous snake produces specific sign symptoms. Even 50% of the bite inflicted by poisonous snake does not produce any sign of envenomation. Bites rates are highest in temperate and tropical regions where the population subsists by manual agriculture. Estimates indicate > 5 million bites annually by venomous snakes worldwide, with > 12,5000 deaths.[2]

An early World Health Organization-funded study estimated about 8,000 cases of snakebite with over 20% mortality in Bangladesh annually. Incidence of snakebite is usually recorded in young people (11-20 years) engaged in active physical work in rural areas. Most bites in Bangladesh are recorded between May and October (rainy season) with highest number in June. Lower and upper limbs are most common sites of snakebite, but it may happen in other sites as well. Delayed presentation to the hospital, lack of availability of antisnake venom and modern management facility are the main causes of death.[4]

Methods:

This cross sectional study carried out in the department of Medicine, Rangpur Medical College Hospital, Rangpur from 1st June 2010 to 28th February 2011. A total number of 111 snake bite patient with age ranged from 18 years to 80 years of both sexes was studied.

Patient admitted in inpatient department of medicine with history of snake bite were enrolled. Data was recorded in a pre designed case record form. All patients were given an explanation of the study. Informed consent was taken from the patients and permission was taken from the Ethical Committee of Rangpur Medical College, Rangpur. The study did not involve any additional investigation procedures and significant risk as well as economic burden to the patients.

Results:

A total 111 patient were studied, among them male were 69(62.16%) and female were 42 (37.84%), in between 18-80 years of age. 22 patient (19.81%) of total study population were from urban area whereas 89 (80.19)% patient from rural area. Among the study population 35 (31.53%) were farmer, 35 (31.53%) were house wife, 32 (28.82%) were student, 04 (3.60%) were school teacher, 04 (3.60%) were shop keeper, 01 (0.90%) was snake charmer (Fig I).

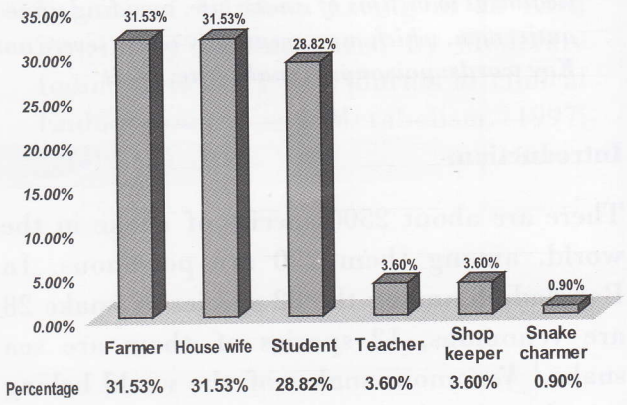

Fig I: Distribution of the patient by occupation (n= 111)

Table I shows the incidence of biting in day or night time in envenomated and all patient.

Table I:

Time of biting in envenomated (n=11) & all patient (n=111)

Time of biting	Envenomated patient n (%)	All patients n (%)
Day time	06 (54.55%)	64 (57.66%)
Night time	05 (45.45%)	47 (42.34%)

Incidence of envenomation and type of snake among envenomated patient were shown in Fig II and III respectively.

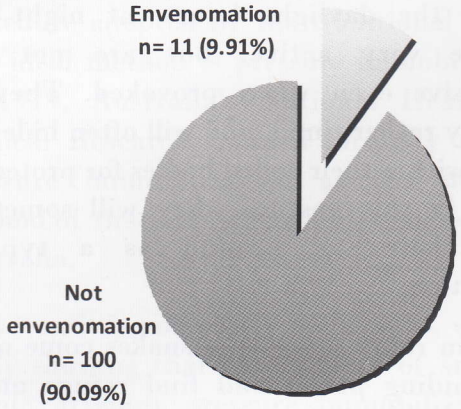

Fig II: Incidence of envenomation (N=111)

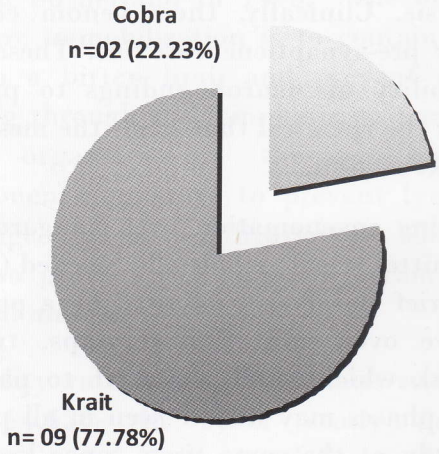

Fig III: Type of snake among envenomated patient n=11

47 (42.34%) bite was during working in the field, 43 (38.74%) bite was during house hold activities, 09 (8.10%) bite was during sleeping and 12 (10.81%) while walking along road (Fig IV).

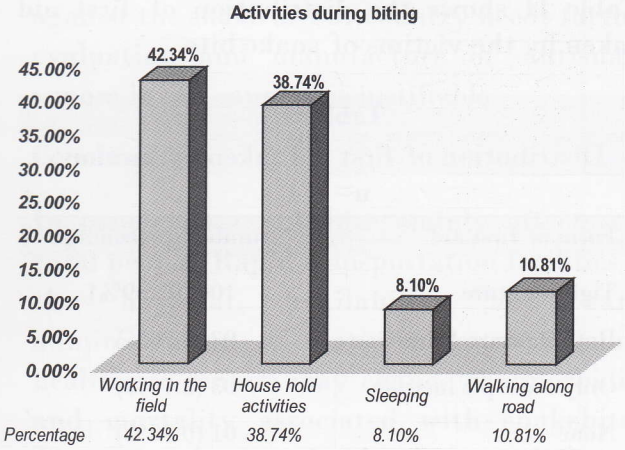

Fig IV: Distribution of victim's activities during biting n=111

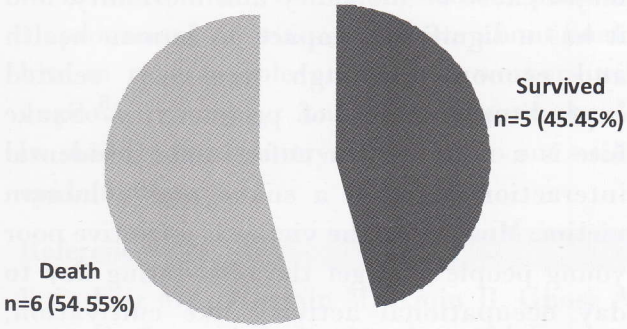

Fig V: Mortality rate among envenomated patient n=11

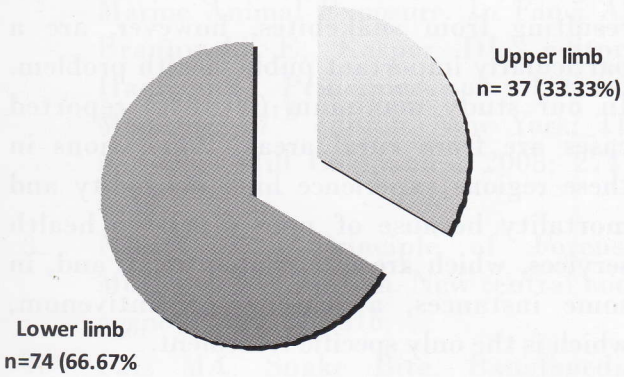

Fig VI: Distribution of patient by site of bite, n=111

Table II shows the distribution of first aid taken by the victims of snake bite.

Table II:

Distribution of first aid taken by victims, n=111

Form of first aid	Number/ percentage
Tight ligature	104 (93.69%)
Both ligature & incision	03 (2.70%)
Only multiple incision	03 (2.70%)
None	01 (0.90%)

Discussion:

Snake bite particularly in the rural tropics is a major cause of mortality and morbidity, and it has a significant impact on human health and economy through treatment related expenditure and loss of productivity.[8] Snake bite is a result of an unfortunate accidental interaction between a snake and a human victim. Most often the victim is an active poor young people who get the bite during day to day occupational activity like cultivation, fishing, plantation, wood collection, watching the 'crop' or 'garden' lying in floor or even during rural foot walk. Sometimes it happens in home surrounding like while on chicken or pet bird care.[9] Envenoming and deaths resulting from snakebites, however, are a particularly important public health problem. In our study maximum (80.18%) reported cases are from rural areas. Populations in these regions experience high morbidity and mortality because of poor access to health services, which are often suboptimal, and, in some instances, a scarcity of antivenom, which is the only specific treatment.[10]

In our study venomous snake bite was found 9.91% and in other study done by Faiz et al was 39.59 %.[5] Most of the venomous snake bite was by Krait (77.78%). Kraits are ophiophagous, preying primarily upon other snakes (including venomous varieties) and are cannibalistic, feeding on other kraits. They will also eat mice and small lizards.[11] All kraits are nocturnal. They are more docile during the daylight hours; at night they become very active, but are not very aggressive even when provoked. They are actually rather timid, and will often hide their heads within their coiled bodies for protection. When in this posture, they will sometimes whip their tail around as a type of distraction.[12]

Often in rainy season the snakes come out of their hiding places and find refuge on dry places inside a house. If bitten by it in sleep the victim seldom comes to know as the bite feels more like an ant bite or a mosquito bite. The victim may be dead before he even wakes up[13]. Bungarus species have highly potent neurotoxicvenom which can induce muscle paralysis. Clinically, their venom contains mostly pre-synapticneurotoxins. These affect the ability of neuron endings to properly release the chemical that sends the message to the next neuron.

Following envenomation with bungarotoxins, transmitter release is initially blocked (leading to a brief paralysis), followed by a period of massive over excitation (cramps, tremors, spasms), which finally tails off to paralysis. These phases may not be seen in all parts of the body at the same time. Since kraits are nocturnal they seldom encounter humans during daylight hours, so bites are rare and they may prefer to deliver non-fatal bites[14], but a bite from a krait is potentially life-threatening, and should be regarded as a medical emergency.

Majority of the bite in lower limb was 66.67% but 65.95% in other study[6]. Ligatures had been applied in 93.69%. The patients

presented with tight arterial ligature which compromising arterial circulation and compelled one patient to do fasciotomy. This denotes the ignorance of the people about the first aid procedure and dependency to ancient procedure adopted by the traditional healers. The ideal method is pressure immobilization. In 1979, Australia's National Health and Medical Research Council formally adopted pressure immobilization as the preferred method of first aid treatment for snakebites in Australia.

However, it is not widely adhered to, with one study showing that only a third of snakebite people attempt pressure immobilization[15]. Pressure immobilization is not appropriate for cytotoxic bites such as those inflicted by most vipers[16-18], but may be effective against neurotoxic venoms such as those of most elapids.[19-21] Developed by medical researcher Struan Sutherland in 1978,[22] the object of pressure immobilization is to contain venom within a bitten limb and prevent it from moving through the lymphatic system to the vital organs. This therapy has two components: pressure to prevent lymphatic drainage, and immobilization of the bitten limb to prevent the pumping action of the skeletal muscles.

Mortality rate among venomous snake bite was 54.55% in other study done in Mymensingh Medical College Hospital mortality was 44%.[7] Dependency to the faith healers, delayed presentation to the hospital, unavailability of antisnake venom and modern management facilities (ICU) is the major cause of this high mortality. Besides the antisnake venom that we use, these come from India, these act against four species Cobra, Krait, Russell's viper and saw scaled viper. So, efficacy of polyvalent antisnake venom against the snake of our country needs further evaluation and manufacture of antisnake venom in our country is justifiable.

Conclusion:

In conclusion, snakebite mainly affects the rural people. Rapid transportation facilities to the hospital, availability and early administration of anti-venom at primary healthcare centers may change the morbidity and mortality associated with snakebites. There is also need to educate the rural population about the hazards, first aid and modern treatment of snake bites. Snake bite patients should be managed in ICU or well facilitated ward and by trained persons. Improvement of mass awareness about snake bite in rural people and health workers will improve mortality. Antisnake venom should be made in our country according to our snake epidemiology.

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Original Article

Efficacy of Intralesional Triamcinolone Acetonide Injection in the Management of Chalazion.

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Abstract :

Purpose: *To evaluate the safety and efficacy of intralesional triamcinolone acetonide injection in the treatment of Chalazia.* ***Study Design:*** *Prospective interventional study.* ***Material and methods:*** *96 Patients presenting with Chalazia, with a range of age 12 years and above, treated at the Dept. of Ophthalmology, BSMMU, Dhaka from July 2008 to June 2009 were included. Study population were divided into two groups on patients choice method. Group–A (study group) consists of 54 chalazion patients who were took triamcinolone acetonide injection and in Group–B (control group) where 42 chalazion patients underwent incision & curettage procedure. Data regarding: Lesion size, lesion regression or recurrence and complete ophthalmic examination were recorded at the time of injection and subsequent follow-up. Success was defined as the disappearance of or decrease in size of lesion to 1mm in diameter or less after 1 month of treatment.* ***Results:*** *Success rate was 88% in Group –A and 92.5% in Group-B. There was no significant difference observed in two groups.* ***Conclusion:*** *Triamcinolone injection is an effective treatment in Chalazia, achieving lesion regression. Most cases resolve with 1 injection. It may be considered as a first treatment in cases when diagnosis is straightforward. It is a safe treatment and cost is accessible.*

Key word: Chalazion, Triamcinolone Acetoide

RCMCJ 2011; 1(1): 19-24

Introduction

Chalazion is derived from a Greek word meaning hailstone.[1] Chalazion is a chronic inflammatory granulomatous infiltration of meibomian glands caused by the blockage of meibomian gland orifices and stagnation of sebaceous secretion.[2] The granuloma contains various inflammatory cells including, epitheloid and giant cells, neutrophils, eosinophils and lymphocytes. The condition affects almost people of all ages. A chalazion presents as a mass on the eyelid, causing cosmetic disfigurement and discomfort. Larger-sized chalazia may cause ptosis and refractive error.[3] Cosmetically they can be unsightly and rarely they can lead to conjunctivitis or cellulitus.[4] Patients are usually initially advised to apply hot compresses to the cyst with a wet flannel to encourage it to spontaneously drain. Previous studies have found a 25-50% resolution rate with this conservative treatment.[5,6] Persistent lesions may be treated through different treatment options. These include incision and curettage, intralesional triamcinolone acetonide 0.2 ml (40 mg/ml), injected through the conjunctiva, in the lesion with a tuberculin syringe.[7] In the late 1970's, treatment with localized steroid injections was first described.[8] Since then, there have been a few prospective interventional studies investigating the efficacy, simplicity and safety of intralesional triamcinolone acetonide (TA) in the treatment of chalazion and in

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some studies comparing intralesional corticosteroid injection and surgical treatment of chalazia. But there are no local studies available to compare the treatment outcomes of intralesional triamcinolone acetonide injection in primary and recurrent chalazia. Localized skin depigmentation has been reported following transcutaneous injections but adverse effects are minimized through trans-conjunctival injection.[9] In addition accidental globe penentration has been reported as a result of trans-cutaneous injection of triamcinolone acetonide into the chalazion.[10] Chalazion is a common eye lid disease. Incision & curettage is the traditional treatment that is invasive and painful technique and relatively costly, requiring pad and bandage for some hours. On the other hand intralesional triamcinolone acetonide is relatively less invasive method which is very simple and cheap, not requiring pad and bandage, hence not curtailing the working hours.

Several studies[7,9] have shown that intralesional triamcinolone acetonide injection can successfully treat the chalazion. So studies are necessary to observe the efficacy of this intervention in the management of chalazion in comparison to traditional incision and curettage method.

Materials & Methods:

This prospective interventional comparative study was carried out in the Department of Ophthalmology ,Bangabandhu Sheikh Mujib Medical University, Dhaka over a period of one year from july 2008 to june 2009. 96 patients of both male & female patients, age 12 years and above, primary and recurrent chalazion patients were included in this study. 6 patient were dropped out during follow up. The painful chalazion, chalazion suspicious to malignancy, chalazion with other ocular diseases and age below 12 years were excluded from the study. Informed consent was taken from the patients and a proforma was used to record data regarding lesion size, duration of the lesion, history of onset, whether the lesion was primary or recurrent and complete ophthalmic examination, at the time of recruitment of the patients. Patients were divided into two groups on the basis of treatment procedure. Group- A (Triamcinolone Acetonide injection) was study group and Group-B (Surgical) was control group.. Group –A consists of 54 patients (4 patient dropped out) and Group-B consists of 42 patients (2 patient dropped out). Patients were also subgroup according to size of lesion and chronicity of lesion.

Outcome of this study was measured by reduction of size of chalazion. The patient was reviewed after 2 weeks. The size of the lesion was again measured at longest axis in mm. If the lesion had reduced by half of its original size at the two weeks stage, the patient was given a further follow-up appointment after one month and, if all was well at this stage or decrease in size of chalazion to 1mm in diameter the patient was discharged. The treatment procedure was repeated if the chalazion had not reduced by half of its original size. Success was defined as the disappearance of or decrease in size to 1mm in diameter or less within after one months of initial treatment. If a lesion recurred or regressed minimally (<50%), further injections were administered. Patients who did not respond to two injections after one month were referred for surgical procedure.

Technique of intralesional triamcinolone acetonide injection:

The triamcinolone acetonide injection 40 mg/ml was diluted with 3 ml 2% lignocaine injection to form 10 mg /ml concentration Then 1 ml triamcinolone acetonide was taken

by 1 ml insulin syringe with 27 gauge needle. The conjunctiva was anaesthetized with 0.4% oxybuprocaine drops. The skin of the eyelids and conjunctiva was cleaned with 5% povidone iodine and draping of the treated eye was done meticulously. The eyelid was everted without use of chalazion clamp and needle was passed transconjunctivally into the chalazion in such a way that inadvertent perforation of globe could not occur, even if the needle was passed too deeply and during procedure lid guard was used. A 27 gauge needle on 1ml insulin syringe was used to inject 0.01 ml to 0.2 ml of 10mg/ml triamcinolone acetonide transconjunctivally into the chalazion. The amount of injection depends on the size of the lesion or resistance felt on the syringe plunger (Fig-I). In this procedure a total 54 patients with chalazia were treated with triamcinolone acetonide injection. Care was taken not rupture the wall of the chlazion. If the wall of the chlazion ruptured, the case was excluded from the study. The eye was not padded after procedure but was given chloramphenicol eye ointment to apply to the treated eye three times daily for 5 days and was instructed to apply gentle digital massage over the chalazion for 5 minutes after each ointment application.

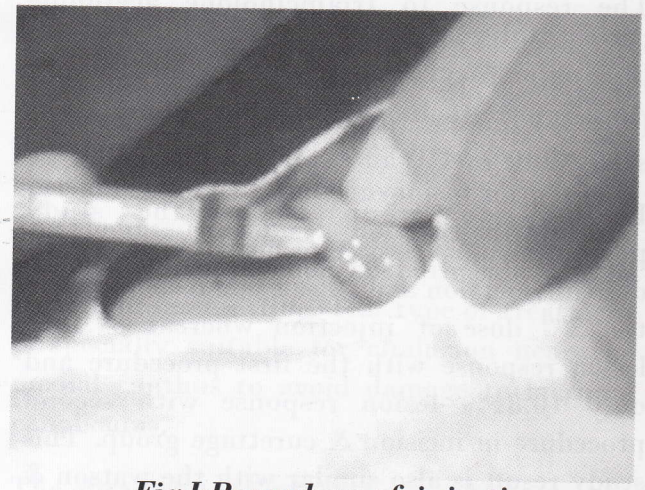

Fig.I:Procedure of injection

Result:

Table-I and II shows the success rate of triamcinolone acetonide injection (Group A) and incision & curettage (Group B) group in treating chalazion in respect of size of the lesion respectively. No significant difference (p>0.05) was observed within both group according to size of the lesion

Table: I

Success rate of Intralesional triamcinolone acetonide injection in treating the chalazion according to size of the lesion (Group -A)

Size of the lesion (n)	Success		x^2 value	P value
	No of cases	Percentage		
< 5mm (32)	28	87.50%	0.166	>0.05
6-10mm (12)	10	83.33%		
>10m (6)	5	83.34		

Table: II

Success rate of Incision and curettage in treating chalazion in respect of size of the lesion (Group-B)

Size of the lesion (n)	Success		x^2 value	P value
	No of cases	Percentage		
< 5mm (18)	17	94.44%	2.45	>0.05
6-10mm (14)	13	92.85%		
>10mm (8)	7	87.5%		

The response to triamcinolone acetonide injection and incision & curettage according to duration of the lesion were shown in Table III and IV. The result was not significant (p>0.05) in both group.

Table: III

Response to triamcinolone acetonide injection according to chronicity of the lesion in Group-A

Size of the lesion (n)	Success		x^2 value	P value
	No of cases	Percentage		
< 1 month (30)	27	90%	1.33	>0.05
> 1 month (20)	16	80%		

Table: IV

Response to incision & curettage according to chronicity of the lesion in Group-B

Duration of chalazion	Success		x^2 value	P value
	No of cases	Percentage		
1 month (22)	21	95.45%	0.39	>0.05
>1 month (18)	16	88.88%		

Table V & VI shows the outcome according to follow up in triamcenolone acetonide injection treated patient (Group-A) and incision & curettage group (Group-B) respectively.

Table: V

Result of triamcenolone injection group after first and second injection (n=50)

Variable	Follow up of after				Total success	
	1st injection		2nd injection			
	No	%	No	%	No	%
Treatment Success	33	66%	10	20%	43	86%

Table: VI

Result of incision & curettage group after first & second operation (n=40)

Variable	Follow up of after				Total success
	1st Procedure		2nd Procedure		
	No	%	No	%	
Treatment Success	33	89.18%	4	10.81%	92.5%

Table VII Shows the comparison of success rate between Group-A and group-B. The results was not significant (p >0.05).

Table: VII

Comparison of success rate between injection group (Group-A) & operation group (Group-B)

Group	No of cases	Success		Z Value	P Value
		No	Percentage		
Injection group (GroupA)	50	43	86%	0.36	>0.05
Incision & curettage group (Group B)	40	37	92.5%		

The complications of intralesional triamcinolone acetonide injection versus incision & curettage groupwere shown in Table-VIII

Table-VIII

Complications of intralesional triamcinolone versus incision & curettage after one month follow up.

Complications	Injection group (50)	Incision & curettage group (40)
Depigmentation of the lid skin	2	0

Discussion

A chalazion is common eye problem in Bangladesh, which is predominantly composed of corticosteroid sensitive histocytes, multinucleated giant cells, lymphocytes, plasma cells, polymorphonuclear leukocytes and eosinophils. The local injection of corticosteroids has the desirable effect of suppressing additional inflammatory cells and impending chronic fibrosis and scar formation, which typically appear as a small, firm, non tender aft er resolution of the acute chalazion.

In our study, no significant differences were observed within triamcinolone acetonide injection (Group A) and incision & curettage (Group B) group regarding success rate in respect to different size of the lesion. These findings are comparable with the study of HO and Lai,[3] Rahman.[11]

The response to triamcinolone acetonide injection and incision & curettage according to duration of the lesion were not significant (p>0.05) Similar finding are observed in the study done by HO and Lai,[3] Rahman.[11]

In injection group among the study population 66% lesion response with the 1st dose of injection and 20% lesion response with the 2nd dose of injection whereas 89.18% lesion response with the first procedure and only 10.81% lesion response with second procedure in incision & curettage group. This study result is also similar with the watson & Austin study.[12]

The success rate in the triamcinolone acetonide injection group were 86% and in the incision & curettage group were 92.5%. There was no statistically significant difference between two groups of treatment. This study is corresponds with that of Goawalla and lee study.[9]

During one month follow up period there was depigmentation of the lid skin which is yellowish white in colour observed in two patients in injection group. It can be explained by that the injection was in suspension form and partly due to local side effect of steroid. In incision & curettage group there were no such types of complication observed during one month follow up period. This study is comparable with that Rahman study.[11]

Analysis of outcome evaluation in this study shows that intralesional triamcinolone acetonide injection is effective in resolving chalazia as incision & curettage irrespective of ages and sexes of the patients and size or chronicity of chalazion, though 20% patients with chalazia needs second injection and in incision & curettage group 10.81% lesion needs 2nd procedure.

The advantages of this procedure over conventional surgery are that it is simple and cheap, minimal bleeding, eliminate the risk of damaging the eyelid structures, requires no special instrument and convenient for patients and doctors. Paching is not needed. Multiple chalazia in the eyelids of both side can be treated in same sitting. This type of treatment is specially suitable for chalazion near the medial canthus to avoid damage to lacrimal canaliculus.

The disadvantage of this procedure is that 20% cases required second injection and small proportion of cases (14%) required surgical procedure. Injection of chalazion with triamcinolone acetonide is quick, safe, cheap and convenient and reasonably effective alternative to the standard surgical management of this common condition.

Conclusion

There is no obvious ideal treatment for all cases of chalazion. However the surgery is more time consuming and requires the use of operating room, sterile instrument etc. Steroid injection can be applied in treating children, multiple chalazion where surgical treatment is not feasible & patients who are afraid of undergoing surgery. It is simple and cheap and convenient for doctors and patients. Intralesional triamcinolone acetonide injection may be an effective alternative to the treatment of chalazion.

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Original Article

Comparison of Forced Expiratory Volume in 1st second (FEV1%) among Male Smoker and Non-Smoker Tobacco Industry Workers

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Abstract :

Background: *Tobacco industry workers exposed to tobacco dust and smoke in their work places, usually they have varying degree of impaired pulmonary functions, but the level of awareness about this occupational hazard among the tobacco industry workers and authorities are inadequate.* ***Objective:*** *The present study was conducted to observe the effects of tobacco dust and smoke on pulmonary functions of tobacco industry workers by measuring $FEV_1\%$.* ***Methods:*** *This cross-sectional study was carried out in the Department of Physiology. Rangpur Medical College, Rangpur, from July 2008 to June 2009 on fifty apparently healthy male smoker (Group - B) and forty non-smoker (Group - C) tobacco industry workers, age ranged from 20 to 45 years. For comparison, fifty apparently healthy male non-smoker, non-tobacco workers with age and body surface area matched subject (Control group - A) were also included. The study groups were selected from different tobacco industries of Rangpur district and control group were selected from the surrounding community who belonged to lower and lower middle socioeconomic status. $FEV_1\%$ was measured by digital spirometer.* ***Results:*** *Smoker tobacco workers have significantly altered measured and percentage of predicted value of $FEV_1\%$ than control subjects ($p<0.001$) and non-smoker tobacco workers ($p<0.01$), but there were no significant differences of these values of $FEV_1\%$ between non-smoker tobacco workers and control subject.* ***Conclusion:*** *Smoker tobacco workers have more impaired pulmonary functions than non-smoker tobacco workers and control subjects.*

Key words: $FEV_1\%$, Smoker, Tobacco industry workers

RCMCJ 2011; 1(1): 25-28

Introduction:

Tobacco industries provide livelihood to tobacco workers who are engaged in tobacco cultivation, processing and rolling of beedis/cigarettes. Environment of tobacco industries are usually polluted by tobacco dust. Inspirable dust concentration is about 150-fold higher in tobacco factories.[1] Endotoxin concentration also increased in the air of tobacco factories.[2] Workers of tobacco industries are chronically and predominantly exposed to tobacco dust and majority workers of tobacco industries are usually smokers; non-smoker tobacco workers are also exposed to passive smoking at their works places.[3] Inhalation is the common route of absorption of air born contaminants caused by tobacco dust and smoke and impairment of lung functions is related to inhalation of dust.[4] Tobacco dust exposure induces oxidative stress among tobacco workers that leads to impairment of lung functions and lung diseases.[5] Tobacco smoke is a bioaerosol that contains endotoxin, peptidoglycan fragments,

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lypopolysaccharide, various fungal and bacterial constituents.[6] Tobacco smoke also contains a large number of free radicals, including peroxyl radicals, superoxide anion and nitrogen oxide.[7] Tobacco dust contains agents that cause non-immunolgically mediated bronchoconstriction.[8] So, it may be said that tobacco industry workers exposed to tobacco dust and smoke in their work places have impaired pulmonary functions. There are many tobacco factories in many parts of our country and remarkable portion of our country in Rangpur where working a significant portion of our population but unfortunately they are not aware about their impaired status of lung functions and to the best of our knowledge, assessment of tobacco workers lung functions status have not yet been done in our country. Considering this, our present work has been designed to study the status of lung functions of tobacco industry workers by measuring FEV_1% by Autospiro (Digital Spirometer). The result of this study would help to create awareness among the tobacco workers and authorities and they may take appropriate measures for prevention of lung functions impairment.

Materials and Methods:

This cross-sectional study was carried out in the Department of Physiology, Rangpur Medical College, Rangpur, from July-2008 to June-2009. A total number of 140 apparently healthy male subjects with age ranged from 20 to 45 years were included in this study and all of them belonged to lower and lower-middle socioeconomic status and they are also approximately body surface area matched. Among them 50 were male smoker tobacco industry workers (Group-B) who smoke at least five stick per day for two years, 40 were male non-smoker tobacco industry workers (Group-C) and 50 were non-smoker workers (Control Group-A). Tobacco workers staying eight hours per day in the tobacco factory for at least two years. All the experimental subjects were selected from different tobacco factories of Rangpur district and control subjects were selected from the surrounding community. Significantly disabled subjects who unable to perform Spirometric procedures and subjects with chest diseases like asthma, chronic obstructive pulmomary diseases, pulmonary tuberculosis or any form of acute illness were excluded from the study. After selection of the subjects, objectives and benefits of this study were explained to each subject and an informed written consent was taken. A detail personal, medical, family, socioeconomic, smoking and working history were recorded in a preformed questionnaire and thorough physical examinations were done and documented. Height and weight of the subject were measured for calculation of body surface area.[9] Then the subjects were examined for FEV_1% by digital spirometre. Data were expressed as mean ± SD. Statistical analysis was done by using SPSS version 12. Unpaired 't' test were done as applicable.

Result:

The mean ± SD age and body surface area of all the subjects were almost similar and the groups were matched for age and body surface area (Table-1).

Table I

Mean ± SD age and body surface area in different groups.

Group	Total number of subjects (n=140)	Age (years) mean±SD	Body surface area-Sq. m
A	50	35.10±8.47	1.50±.09
B	50	36.12±8.94	1.47±.15
C	40	35.98±7.59	1.47±.11
Statistical analysis		t value	p value
A vs B		0.586	> 0.05
A vs C		0.510	> 0.05
C vs B		1.082	> 0.05

FEV_1% of control subjects were within normal limit as statistically there were no significant differences of mean predicted value of FEV_1% among the three groups (Table-II).

Table II

Mean ± SD of predicted value of FEV_1% in different groups.

Group	Total number of subjects (n=140)	Age (years) mean±SD	Body surface area-Sq. m
A	50	35.10±8.47	87.14±1.60
B	50	36.12±8.94	86.93±1.67
C	40	35.98±7.59	86.96±1.36

Statistical analysis	t value	p value
Gr A vs B	0.533	> 0.05
Gr A vs C	0.585	> 0.05
Gr C vs D	0.925	> 0.05

Smoker tobacco workers have significantly altered measured and percentage of predicted value of FEV_1% than control subjects ($p < 0.001$) and non-smoker tobacco workers ($p < 0.01$); but there were no significant differences of these values of FEV_1% between non-smoker tobacco workers and control subject (Table-III).

Table III

Mean ± SD measured and percentage of predicted value of FEV_1% in different groups.

Group	Total number of subjects (n=140)	Age (years) mean±SD	Body surface area-Sq. m
A	50	97.46±4.30	111.88±4.97
B	50	89.52±9.50	102.98±10.49
C	40	95.48±6.40	109.80±7.12

Statistical analysis	t value	p value
A vs B	0.000	< 0.001
A vs C	0.084	> 0.05
C vs B	0.001	< 0.01

Discussion :

The present study was done to observe FEV_1% in male smoker and non-smoker tobacco industry workers. FEV_1% was also studied in apparently healthy age and body surface area matched non-smoker non-tobacco industry worker in order to compare these values with the experimental groups. In this study, FEV_1% of control subjects were within normal limit as statistically there were no significant differences of mean predicted value of FEV_1% among the three groups. Smoker tobacco workers have significantly altered measured and percentage of predicted value of FEV_1% than control subjects ($p<0.001$) and non-smoker tobacco workers ($p<0.01$): but there were no significant differences of these values of FEV_1% between non-smoker tobacco workers and control subjects. Similar findings were also reported by different researchers in different researchers in different countries.[10,11]

Various mechanisms have been proposed by different investigators for the impairment of lung functions of smoker tobacco industry workers. Some of them suggested that precipitation of serum antibodies to tobacco extract and extract of micro-organisms and increased airway reactivity may alter FEV_1% in smoker tobacco workers than non-smokers and control subjects.[10,11] Though various suggestions made by different investigators as mentioned above as possible causes of lung functions impairment but it is difficult to comment on exact mechanisms in this type of study. In the present study, decreased lung functions observed by significant changes in FEV_1% in tobacco industry workers is likely due to chronic allergic effects of tobacco dust. Allergic effects of tobacco dust usually produce sufficient lgE in the body. IgE binds with mast cell and basophile and some of the

mast cell and basophil rupture and release agents including slow-reacting substance of anaphylaxis (SRSA), protease, histamine, neutrophil and esinophil chemotactic factor at alveolar or bronchiolar site. These substances may cause dilatation of local blood vessels, increased capillary permeability with loss of fluid into tissues, contraction of local smooth muscle cells and even local cell damages by protease. Such type of chronic allergen-antibody reaction may impair lung functions by increasing lung parenchymal and airway resistances secondary to tissue damages and inflammation mediated fibrotic changes.

Presence of irritant substances including oxidants derived from inhalation of tobacco dust and smoke may arrest the activity of cilia lining the bronchi with decreased rate of airway clearances and subsequently there occur inflammatory responses, hypertrophy or hyperplasia of mucous glands which are causing progressive impairment of lung functions. So smoker tobacco workers have more impaired lung functions than non-smoker tobacco workers and this was supported by significantly alter $FEV_1\%$ in smoker tobacco workers than non-smoker tobacco workers and control subjects.

Conclusion

In this study, significant impairment of lung functions was found in smoker tobacco workers that control subjects and non-smoker tobacco workers. Further study in a large sample sized may be recommended for better evaluation.

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Review Article

Which Should be the Medical Symbol - Single or Double Snake? A Historical Review

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Abstract:
Symbol is a conventional sign in writing or printing, represents something else that is invisible. When one look at the logos of different medical organizations, will find the images of single or double snakes around rods are used interchangeably. Between the two most popular medical symbols either single or double snake, it is interesting to know that, one is being the classical and true sign of medicine whereas the other one's association is rather doubtful. The origins and introduction of these two symbols in medical sciences are quite different, and thus it is of value to examine the historical events that linked them with the medical profession.

Key words: Single snake, Double snake, Medical Symbol

RCMCJ 2011; 1(1): 29-36

Introduction:

Symbol is a term, a name, or even a picture that may be familiar in daily life and possesses specific associations besides its conventional meaning.[1] Symbols can often be understood in more than one way and can merge with national spirit. Although illustrations of the heart, the eye, the liver or the brain have represented the characteristics of human health in particular contexts, but none are comprehensive symbols of medicine.[2] However some historical associations might be useful in order to shed illumination on some aspects of this symbolism. The caduceus of Hermes of double snake and the rod of Asclepius of single snake have been the most widely used symbols representing the medical profession since ancient time. However the two logos may be visually quite similar, the historical and mythical origins of these figures differ quite dramatically.

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Review and analysis of Greek mythology indicates that the single snake encircling a rod of Asclepius is the true symbol of medicine and has a historical connection with the practice of medicine. Similar examination of the caduceus symbol of Hermes which is a double snake– encircled rod with a pair of wings reveals it to be a closely associated with the concepts of commerce, trade, wealth, thieves and the practice of alchemy.

History of symbol of medicine

The snake in ancient times represented wisdom, health, and immortality. It was considered to be the most powerful symbol against disease because the snake renews itself in every year as it gets a new skin and sheds the old one. This ability has been associated with the circle of life. The Asclepius rod with single snake was consistently used to represent medicine throughout European history except for the middle Ages (5th to 15th century) when the Catholic Church suppressed the use of symbols related with ancient Greco-Roman gods. Instead, the medical profession was represented by a common medical exercise of that time, namely the urine flask or the uroscopy .[3-5]

As because Asclepius was often referred to as the "blameless physician" [6,7] and holds a prominent place in the Hippocratic oath, the Asclepius rod with single snake (Fig: I) was again recognized and firmly established as the symbol of medicine in 17th century. Subsequently, the illustrations, art works, medical medals and statues of Asclepius began to reproduce in many countries such as England, Netherlands, Norway, and Sweden.[8]

Fig I: Asclepius rod with single snake

The Asclepius symbol of single snake was used only in a medical context, whereas the double snake of caduceus (Fig II), although used by some medical organizations, was associated with other fields, especially commerce, communications, trades, and chemistry.[5,9]

Fig II: Caduceus symbol of double snake

Actually widespread uses of the caduceus (Double snake) begin in late 19th century and it is used interchangeably along with Asclepius symbol of single snake. For example, the symbol of the U.S. Public Health Service bears the double snake (Fig: III), whereas the British Medical Association, American Medical Association & World Health Organization (Fig-IV) prominently displays the Asclepius rod with single snake.[10,11]

Fig-III: U.S. Public Health Service logo

Fig-IV: WHO logo

History of Single snake around a rod of Asclepius:

Asclepius was the son of the God Apollo and the mortal woman Coronis. Apollo the son of Zeus,[1,12] was the god of healing as well as the sender of plagues.[6] Briefly the story, according to a Roman poet Ovid is as follow: While the Coronis was pregnant with Apollo's child (Asclepius), she fell in love with a young man and was unfaithful to Apollo. When this disloyalty was informed to Apollo by a passing big black bird Raven, he became so angry and shot an arrow into the heart of Coronis. Before dying, Coronis told Apollo that she was

pregnant with his child. When Coronis' dead body was placed on the funeral, Apollo, the regretful lover, opened her dead body and took his son. Asclepius was then born by cesarean section, more properly called Apollonian delivery. Getting out of the womb of dying mother, Asclepius was symbolizing the ability of the physician to bring life out of death. Apollo than took Asclepius to tribe of half man, half horse named Chiron by whom he was brought up and taught the arts of healing. Chiron's daughter Ocyrhoë on seeing the infant makes a prophecy that "he will become a healer of the entire world and will have the ability to restore the dead but he will be stopped by Zeus.[12]

Asclepius has always been traditionally described as a bearded man wearing a gown that leaves his chest uncovered and holding a rod with his sacred single snake coiled around it (Figures V).[13]

Fig: V: The Greek physician Asclepius with his rod encircled snake

Several myths describe how Asclepius chose his symbol of single snake around a rod.[14] In perhaps the most popular tale, Asclepius was examining a patient named Glaukos, whom Zeus had struck dead with a thunderbolt. During the examination, a snake came into the room that surprised Asclepius. He then responded by killing the snake with a blow from his rod. Subsequently Asclepius was astonished by the arrival of a second snake in the room that carried certain herbs and placed it in the mouth of the dead snake and thereby restored it to life. Asclepius quickly perceived the lesson and restored Glaukos life by the same herbs, and, as a mark of respect, adopted the snake coiling around his rod as his sign.[12]

The ancient Greeks considered Asclepius as the foremost physician because he alone dared to care for the outsider, to help anyone suffering, regardless of the consequences. This suggests that the obligation of the physician to assist the suffering, regardless of the sufferer's situation and the personal risk the physician might take, is integral to the ancient Greek understanding of physician duty. Not only Asclepius being symbolized in history of medical science, his family was also made to personify different medical concepts: His wife, Epione, personifies "epios"; & sons Machaon is the representative of surgery and Podalasius is the representative of internal medicine. Apart from his two sons, he had several daughters including Hygieia (cleanliness), Meditrina (medicine), and Panacea (all healing).They all symbolized different aspects related to medicine and wellbeing.[6,7]

As mentioned earlier, Ocyrhoë forecasted the fate of Asclepius in his very first life that "for interfering in the natural laws of mankind, Zeus killed Asclepius with a thunderbolt".[12] However, Asclepius's fault was not raising the dead in general but restoring the lives of those

Zeus had fated.[13] But later, after intervention from Apollo, Zeus realized Asclepius service as a physician to humanity and restores his life as an Olympian divinity of medicine and placed him in the sky.[12]

The heroic, and later mythological figure of Asclepius was a major focus of ancient Greco-Roman medical tradition from perhaps as early as 1200 BC[7,15] upto 500 AD[8,9]. The first recorded mention of Asclepius as the son of the god Apollo and healer of sicknesses is by the Greek poet named Hesiod in 8th century BC.[16,17] Asclepius was also been mentioned in Homer's *Iliad*, who represented him as ideal Greek physician.[7]

Later Asclepius traditions of patient care spread throughout Greece and, subsequently to the vast Roman Empire.[13,18,19] In Roman times, hundreds of ancient temple complexes, called "Asklepieions", had been built throughout the Greco-Roman world.[19] The "Asklepieions" look like a link between a sanatorium and a modern hospital. Many ancient Greeks including Hippocrates, Socrates, Plato and Galen references Asclepius as physician. Hippocrates proudly claimed descent from Asclepius[13] indeed, Plato often referred to Hippocrates as "the Asclepiad (followers or sons of Asclepius)". [18, 20, 21] The opening lines of the Hippocratic Oath clearly reveal the central role occupied by Asclepius and his mythological daughters, Hygieia and Panakeia, in the hearts and minds of the Hippocrates: "I swear by Apollo the Physician, and Asclepius, and Hygieia and Panakeia and all the gods and goddesses, making them my witnesses, that I will fulfill according to my ability and judgement".[22]

There is a another older reference to the probable origin of the single snake encircling a rod, in the article written by Keith Blaeyney[13] which relates this symbol to the ancient Greek physicians practice of extracting the common parasitic filarial worm, or the 'Guinea worm' (*Dracunculus medinensis*) from their patient's subcutaneous tissues. By cutting a slit in the skin, just in front of the worm's path, and carefully winding the worm around a stick until the whole worm was extracted (Fig-VI).

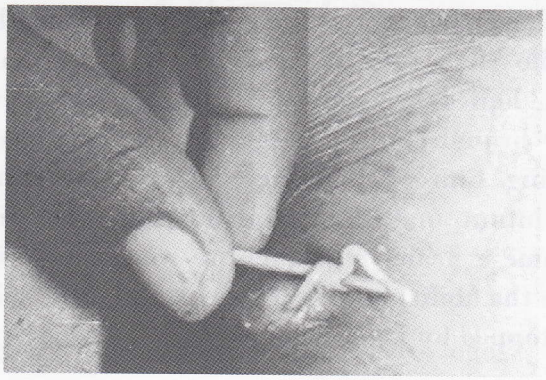

Fig-VI: Removal of *Dracunculus medinensis* by winding around a stick

It is believed that because this type of infection was so common in North Africa and the Turkey at that time, physicians advertised their services by displaying a sign with the worm on a stick. It is still is a common infection in Africa today with no modern therapy but to extract the worms in exactly the same fashion as they did in those days in ancient Greece.[15]

History of Double snake encircled rod with surmounting wings (the caduceus of Hermes)

In the later part of 19th century, the Caduceus symbol of Hermes (double snake–entwined rod with surmounting wings) also became associated with medical practice, as synonymous with the rod of Asclepius. The Caduceus, the magic wand (rod) of Greek Hermes, is represented as a short rod encircled by two snakes and topped by a pair of wings.

In Greek mythology, Hermes, the son of Zeus and Maia, was the winged messenger of the

gods, conductor of the dead, patron of travelers, and protector of merchants and thieves.[2, 23]

Hermes was an amazingly talented and entirely unethical child. After born at dawn, Hermes had stealing his stepbrother Apollo's cattle and hiding them in a cave. He then sacrificed two of the cattle and a tortoise. With the shell of tortoise and the cables made from cattle, Hermes inventing a stringed musical instrument, the lyre (Fig-VII).[24,25] However Apollo discovered the theft of Hermes by prediction and went to Hermes mother Maia to complain. Maia could only show Apollo that her "innocent" child Hermes still in his cot. The furious Apollo took the child to Zeus in order to claim back his cattle, but the attraction with the music of the lyre which was made by Hermes reduced his anger. He then gave the cattle to Hermes in exchange for the musical instrument.

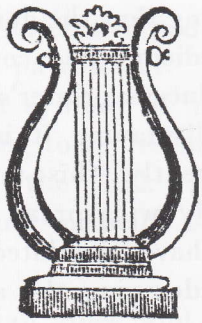

Fig- VII: The lyre (musical instrument)

Continuing in his invention, Hermes also made a musical instrument shepherd's pipe. Its music was so amazing that Apollo again desired it too. Apollo then exchanged the golden wand (rod) that he used to guide cattle for Hermes' instrument.

The golden rod, the caduceus, was described by Apollo as "the wondrous rod of abundance and wealth which is not subject to death and will protect thee".[5,24] Hermes was the swift messenger of Zeus, but he also had a mythological role as a peacemaker (Fig-VIII). According to legend, Hermes separated two fighting snakes by driving his rod into the ground between them; the snake then entwined themselves around the rod in friendship to form the caduceus sign.[25]

Although Hermes was almost always a kind figure toward mortals, he was certainly very active in several areas that are contradictory with the practice of medicine. Hermes was the patron god of thieves, merchants, and travelers; the conveyor of dreams; and the god of games, luck, and commerce.[24] He also came to be regarded as the governor of the tongue and the guide of intelligent and cunning speech. At his best, Hermes was overly smart; at his worst, he was a clever fraud.[5] Mercury, his Roman counterpart, became even more identified with commercial pursuits and was commonly described carrying a purse bulging with coins.[26]

Fig-VIII Hermes with his caduceus

By the 7th century Hermes became associated with alchemy and the alchemists were known as Hermeticists, with secret associations, which remained until the Renaissance in Europe. By the 17th century, Hermes was associated not only with alchemy but also

with astrology, ceremonial magic, and the secret arts.[2,14] During the Middle Ages, the caduceus sign of double snake appeared on printers' signs and merchant ships, symbolizing their role as messengers and businessmen (Fig-IX). Of interest, it has been placed on the front of commercial buildings such as banks, symbolizing Hermes as the patron of trade.[27]

Fig-IX: 18th century commercial Trade token showing Caduceus double snake

Later the introduction of the Caduceus as a medical symbol resulted from a misunderstanding by some European publishing houses in late 19th century[9] and the U.S. Army Medical Corps (USAMC) at the beginning of the 20th century.[12]

The rod of Asclepius or the caduceus: which one is appropriate?

The Asclepius rod with single snake is a medical symbol (Fig-VIII)with a history of over two million years.[14] In contrast, the erroneous use of double snake encircled caduceus in medical science is quit modern.[28] Both these symbols, the Asclepius rod and the caduceus of Hermes were popularized by some European medical publishing houses as their printers' marks, especially as in book's title page.[14] It becomes appropriate at this moment to ask why the Caduceus of Hermes, who was the patrons of commerce and thieves, became a symbol of medicine and its practice.[2] Some have hypothesized that the reason is related to the use of the caduceus symbol by some European publishing houses in late 19th century is purely unintentional. In particular, John Churchill of London, the medical publisher, used a caduceus printer's mark on the title page of many of the medical and scientific books he exported to the United States.[9] The mark may have symbolized Churchill's desire to unite medicine and literature because it consisted of two snake labeled "medicine" and "literature" and a motto "unbreakable bond unites".[29] Nevertheless, John Churchill clearly saw the caduceus as his printer's mark and not the symbol of medicine because several of his medical books also included prominent representations of the Asklepias.[9]

Several United States– based publishing houses, assuming that the double snake was a symbol of medicine, had copied or adapted Churchill's caduceus printer's mark and were prominently displaying it in their medical books.[9] Apparently, this misunderstanding was sufficiently widespread in the medical community to have stimulated the publication of papers condemning the adoption of the double snake of caduceus and neglects the single snake of Asclepius.

The role of the U.S. Army Medical Corps USAMC is also crucial to introduce double snake symbol. In 1902, at the suggestion of Captain Frederick Reynolds, an assistant surgeon in the USAMC, the double snake became a collar badge for all the personnel in the USAMC despite some initial resistance. Captain Reynolds insisted that the double snake was used by many European army medical corps, including the British, which of course were incorrect, and in due course the

'golden caduceus double snake' was adopted by the USAMC[12]. In fact, no other western medical military service of that time displayed the double snake; they all used either the single snake or symbols based on the Christian cross.[9]

Friedlander[9] surveyed 242 logos or insignias of medical or health related organizations in the U.S. and found that professional medical organizations tended to use the staff of Asclepius rod encircling (62%) as their monogram, but commercial organizations (including pharmaceutical companies) were more likely to use the double snake in their logos (76%). The exception was hospitals, where only 37% used a Rod of Asclepius and 63% for the Caduceus.He thinks the reason of using double snake by the commercial organizations are more likely to be concerned with the visual impact a symbol of double snake will increase the selling their products.

Hermes is the self-interested god of trade and wealth and a patron of merchants.[30] Consequently, his symbol of double snake seems hardly fitting to represent the medical profession. But the link between the Aesculapius rod and medicine is quite direct and acknowledged.

Although physician roles and status have changed substantially in the last 3000 years, the patient's demand for integrity, sacrifice, and compassion from physician has remained relatively constant. Understanding the ancient Greek origins of our traditions for medical caring can help us to realize the basis for our own objectives as physicians and fulfillment the expectations of our patients.[6] Thus, physicians must seek to practice their skill without primary regard for the social status of their patient's personal advancement or financial rewards as Asclepius showed it earlier. Sir William Osler wrote, "The practice of medicine is an art, not a trade; a calling, not a business; a calling in which your heart will be exercised equally with your head".[31]

Conclusion:

Presently both symbols are utilized by various medically related organizations; the double snake seems to be the preferred choice of the more commercially oriented institutions and thus should be avoided in the medical practice. The single snake of the Asclepius is the proper symbol of modern medicine. If the wrong symbol—the double snake of caduceus—is embedded in the medical culture, the learned profession must correct this error. Like the ancient Greeks and Romans, our patients are searching for the caring attributes of Asclepius in their providers. Perhaps by better understanding history we can help to restore the spirit of Asclepius to the practice of medicine and thus satisfy both our patients and our deepest expectations for ourselves.

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Case Report

Eagles Syndrome: Classical Presentation

Dhananjoy Majumder,[1] Mujibul Haq Khan,[2] Mahmudur Haq,[3] Ranjan Debnath[4]

Abstract :

Elongated styloid process causing Eagle's Syndrome is a rare clinical entity. The diagnosis is often difficult because of its vague symptomatology. Here we present case reports of two patients, a male and a female, 46 years & 40 years respectively presented between January 2011 to October 2010. Both of the patients presented with pain in the throat, pain in the ear on swallowing for the last 06 months. Palpation of tonsillar fossa and radiological demonstration of the elongated styloid process confirms the diagnosis. Under General Anaesthesia, avulsion of the elongated processes were done through tonsillar fossa approach, after tonsillectomy.

Key words: Eagle's syndrome, Elongated styloid process, Tonsillectomy

RCMCJ 2011; 1(1): 37-39

Introduction:

Elongated styloid process is a rare clinical condition, which often presents with vague cervicofacial pain, foreign body sensation in the throat, dysphagia, facial pain and referred otalgia. The patient presents to the dentist or otolaryngologist with these symptoms. Diagnosis is usually done by palpating the tonsillar fossa for an unusually elongated styloid process. The diagnosis is confirmed by soft tissue lateral radiograph of neck, orthopantomogram or a computed tomography scan (CT scan). The first mention of elongated styloid process as a clinical entity in literature was by Lucke (1870) and Weinlecher(1872).[1] In 1937, Mr. Watt W. Eagle[2], an otolaryngologist first defined symptomatic elongated styloid process and latter called Eagle's syndrome.[3-5] It is the ossification or calcification of the stylohyoid complex. Stylohyoid complex develops from Reicherts cartilage of second branchial arch. It consists of three muscles- stylopharyngeus, stylohyoid & styloglossus, two ligaments- stylohyoid and stylomandibular, two bones- styloid process & lesser cornu of hyoid bone. Styloid process is a long, slender and pointed bony process, projecting downwards, forwards and slightly medially from temporal bone between the internal and external carotids to reach the side of the pharynx. Length of the styloid process in between 2.5-3.0 cm but if it is more than 3 cm, we call it elongated.[6] Usually bilateral elongation is present. Symptoms are usually persistent odynophagia or dysphagia, referred otalgia, constant neck pain. Radiology confirms the diagnosis. Surgical avulsion of the elongated styloid process is the treatment of the disease.

Case report:

Case 1: Mrs. Kohinoor Begum a 40 years old female from Laksam, Comilla came with the complains of constant pain and foreign body sensation in the throat for the last 06 months. She also complains of bilateral neck pain and referred otalgia.

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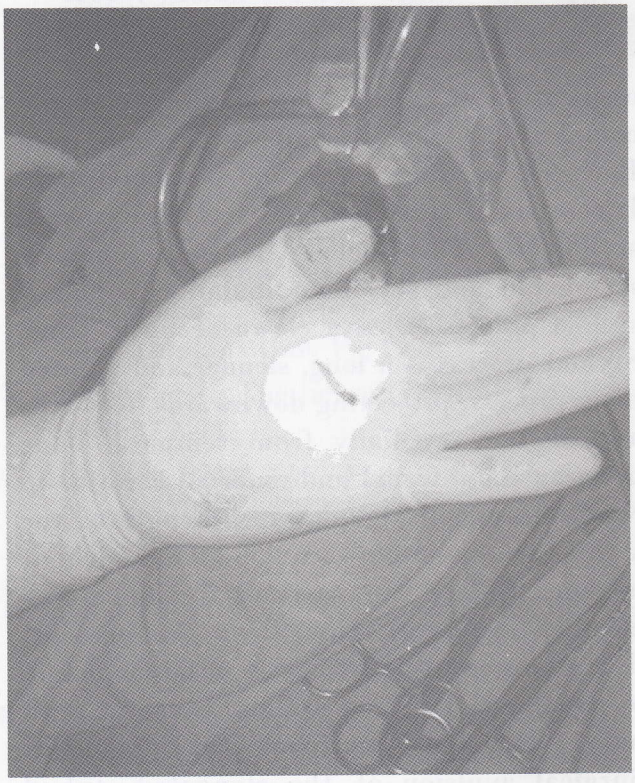
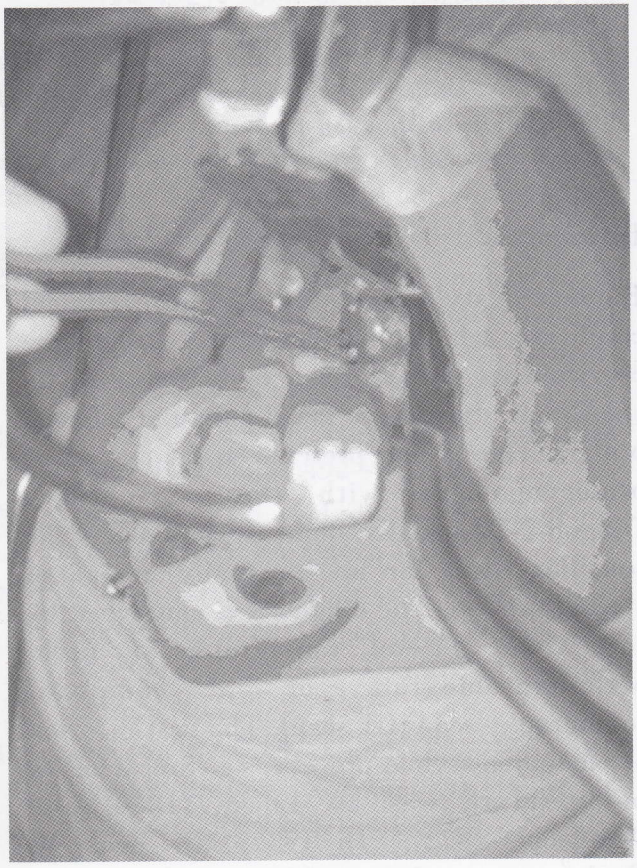
Address of Correspondance*

Throat pain was persistent but aggravated on swallowing and palpation. On digital per oral palpation revealed hard bony projection in both the tonsillar fossa. Radiologically confirmed the diagnosis of elongated styloid process. Medical treatment was not satisfactory. So we went for surgery under G/A through tonsillar fossa approach. At first tonsillectomy were done then bony mass were exposed and excised by bone nibbler. Haemostasis was established. She was discharged on 2nd POD. The patient was fine till the last follow up.



Case II: Md. Ayub Ali, a 46 years old man hailing from Bakalia, Chittagong presented with constant pain in the throat for the last one year. He also complains of neck pain and referred otalgia. Throat pain was persistent but aggravated by swallowing & palpation. On digital per oral palpation hard bony projected mass felt in the both tonsillar fossa. Radiologically confirmed the diagnosis of elongated styloid process. Medical treatment was not satisfactory. So we went for surgery under G/A through tonsillar fossa approach. At first tonsillectomy were done, then bony mass were exposed and excised by bone nibbler. Haemostasis was ensured. He was discharged on 2nd POD. The patient was fine till the last follow up.



Discussion:

Eagle's syndrome is defined as the symptomatic elongation of the styloid process or mineralization (ossification or calcification of the stylohyoid complex). Mr. Watt w. Eagle, an otolaryngologist first documented the syndrome.[2-6] It was Eagle, who described this as a syndrome complex mainly of two varieties. The classical variety presents as pain in throat, referred otalgia and foreign body sensation in the throat. A second variety was

styloid process compressing the carotid artery presenting as carotodynia, headache and dizziness. He found that these patients were relieved of symptoms by shortening the styloid process .The cause of elongated styloid process is not very understood but several theories have been put forward. The most popular one is growth of osseous tissue along stylohyoid ligament[7]. The clinical symptoms with which the patients presents is due to compression on the adjacent nerves mainly the glossopharyngeal, lower branch of trigeminal & the chordatympani. Diagnosis can be confirmed by radiographs which shows an elongated styloid process or mineralization of the stylohyoid complex[8-9].

Injection of local anaesthetic[10] into tonsillar fossa relieves pain and can be used as diagnostic tool. Treatment is mainly surgical where the elongated styloid process is shortened by trans-tonsillar or by external approach. Injection of steroid in the lower tonsillar fossa has been described for patients unfit for surgery. Our patients had an unique presentation of the first variety of Eagle`s syndrome. Symptomatic elongated styloid process usually presents as a non-specific pain, foreign body sensation in the throat and referred otalgia.

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Uniform Requirements for Manuscripts Submitted to RCMC Journal following the guideline of "International Committee of Medical Journal Editors" updated April 2010.

General Principles:

The text of observational and experimental articles is usually (but not necessarily) divided into the following sections: Introduction, Methods, Results, and Discussion. This so-called "IMRAD" structure which is a direct reflection of the process of scientific discovery. Long articles may need subheadings within some sections (especially Results and Discussion) to clarify their content. Other types of articles, such as case reports, reviews, and editorials, probably need to be formatted differently. Authors need to work closely with editors in developing or using such new publication formats and should submit supplementary electronic material for peer review.

Preparation of manuscripts

Type manuscripts double-spaced in all portions, including the title page, abstract, text, acknowledgments, references, individual tables, and legends. Leave 1-inch margin on all sides with number in every page so that it is possible for editors and reviewers to edit the text line by line and add comments and queries directly on the copy. As a general rule, articles should not exceed 4000 words. Over-length manuscripts will not be accepted for publication.

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The title page should have the following information:

1. Article title: Concise titles are easier to read than long, convoluted ones and should not exceeding 50 characters.

2. Authors' names, highest academic degree, affiliations, and complete address for correspondence including mailing address, telephone number and E-mail address.

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Structured abstracts are preferred for original research and systematic reviews. The abstract should provide the context or background for the study and should state the study's purpose, basic procedures (selection of study subjects or laboratory animals, observational and analytical methods), main findings (giving specific effect sizes and their statistical significance, if possible), principal conclusions, and funding sources in a running manner and not under separate headings with three to five **key words** for use as indexing terms. Do not cite references in the abstract. Be concise (250 words, maximum). Limit use of acronyms and abbreviations. Abbreviations must be defined at the first mention. Because abstracts are the only substantive portion of the article, and the only portion many readers read, authors need to be careful that they accurately reflect the content of the article.

The Text

The following are typical main headings: **Introduction, Materials and Methods, Results, Discussion and Conclusion.**

- **Introduction:** Provide a context or background for the study (that is, the nature of the problem and its significance). The purpose(s) of the study should be clearly stated. Provide only directly relevant references, and do not include data or conclusions from the work being reported.

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Describe statistical methods with enough detail to enable a reader with access to the original data to verify the reported results. When possible, quantify findings and present them with appropriate indicators of measurement error or uncertainty (such as confidence intervals).

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• **Illustrations (Figures):** Figures should be either professionally drawn and photographed, or submitted as photographic-quality digital prints. For x-ray films, scans, and other diagnostic images, as well as pictures of pathology specimens or photomicrographs, send sharp, glossy, black-and-white or color photographic prints, usually 127 x 173 mm (5 x 7 inches). Figures should be made as self-explanatory as possible. All photographs, graphs and diagrams should be referred to as figures numbered consecutively in the text in Roman numerals.

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2. **Organization as author**

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3. **Both personal authors and organization as author** (List all as they appear in the byline.)

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