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Abdominal Obesity and Risk of Ischemic Stroke-A Hospital Based Observational Retrospective Study

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Abstract

Introduction: Stroke is a global health problem. It is the leading cause of adult disability and the second leading cause mortality worldwide. It is a leading cause of functional impairment, with 20% of survivors requiring institutional care after three months and 15%- 30% being permanently disabled.

Objectives: Obesity is a problem now a day. The purpose of this study is to see the association of abdominal obesity define by waist-to-hip ratio with ischemic stroke and also to see the correlation with other risk factors of ischemic stroke.

Methods: It is a hospital based observational retrospective study conducted on purposively selected (non probability) hospitalized patients who had been admitted into medicine units (Unit IV and Unit IX) of Dhaka Medical College Hospital, Dhaka during a period of 6 months extending from 1 may 2009 to 31 October 2009. Cases (n=102) with CT scan of brain done were interviewed and examined and had measurements of waist and hip circumference and waist to hip ratio (WHR) calculated.

Results: 63.72% of the ischemic stroke patient had abnormal WHR. The correlation with other risk factors showed that 94.12% of ischemic stroke patient had other co-morbidity. Among them 77.08% patient had hypertension, 37.59% patients had H/o smoking, 15.62% patients had DM and 10.42% patients had dyslipidaemia. Conclusions: The results reveals that abdominal obesity has an association with ischemic stroke.

Keywords: Ischemic stroke; Abdominal obesity Waist-to-hip ratio (WHR).

Introduction

Stroke is a global health problem. It is the leading cause of adult disability and the second leading cause mortality worldwide [1]. It is a leading cause of functional impairment, with 20% of survivors requiring institutional care after three months and 15%- 30% being permanently disabled [2]. Compared with the volume of prospective studies in coronary heart disease, there have been relatively fewer population studies investigating the risk of stroke. Current treatments for patients with established stroke are relatively less effective and risk factor interventions are the real hope of reducing stroke morbidity and mortality in populations [3,4]. The prevalence of overweight or obese peoples rapidly increased worldwide [5]. The impact of obesity on public health

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is a growing concern. because obesity is well recognized to be related to many diseases such as Type 2 Diabetes Mellitus. Hypertension, Dyslipidaemia, Gall bladder disease, Sleep apnoea and cancer [6-8]. The unfavorable effect of obesity on coronary heart disease [9-11] and all cause mortality [12-16] is well recognized. In addition abdominal obesity measured by waist-to-hip ratio (WHR) is related to an increased risk of coronary artery disease [17,18]. The relationship between obesity and ischemic stroke however remain less clear. Several studies have shown an association of obesity as defined by body mass index BMI) with the risk of stroke. The Honolulu Heart Program reported that BMI was associated with increased risk of thromboembolic stroke among non smoking men in older middle age [19]. The nurses health study showed that women with increased BMI had an increased risk of ischemic stroke but not after adjustment for hypertension, diabetes mellitus, high cholesterol [20]. In contrast, other studies have failed to find relationship between obesity measured by BMI and increased risk of stroke in women [21-24] or men [25-26]. Therefore the association of obesity with stroke remains controversial. Furthermore BMI may not be a good indicator of stroke risk. Few studies have examined the relationship between abdominal obesity defined by WHR and stroke. Swedish investigators suggested that increased WHR may be a risk factor for stroke in women [22] and men [24] but these results were limited by small number of cases. Therefore, the information about abdominal obesity as a risk factor for ischemic stroke is very limited, and to date, there has been no study in Bangladesh. The aim of this study is to determine whether abdominal obesity is associated with an increased risk of ischemic stroke.

Methodology

Study Design: It was a hospital based observational retrospective study.

Study place: This study was carried out on the patients who had been admitted in the in patient departments (IPD) of medicine ward-I (unit iv & unit ix). Dhaka Medical College Hospital (DMCH), Dhaka.

Criteria for selection of study place: Medicine units of DMCH was selected for this study purposively as these units of hospital is abundant with a good number of patients of different diseases because of being a tertiary level medical college hospital of Bangladesh, and for being my present workplace as well. Both of these reasons make it possible for me to conduct this study at this hospital.

Study period: This study was conducted over a period of 6 months extending from 1st May 2009 to 31 October, 2009.

Study population: The patients admitted to medicine units (unit iv & unit ix) of Dhaka Medical College Hospital (DMCH) and recognized by attending doctors as a candidate for ischemic stroke.

Inclusion criteria:

a. Adult patients with ischemic stroke evidenced by CT scan of brain.

b. Adult patients with clinical evidence of ischemic stroke but normal CT scan.

Exclusion criteria:

c. All patients with hemorrhagic stroke evidenced by CT scan of brain.

d. Patients having ascetics, abdominal lump or abdominal distension.

e. Patients having skeletal deformity of spine and pelvis.

Method of data collection:

Data were collected from the patients who were admitted to medicine units (unit iv & unit ix) of DMCH. Detailed history was collected in structured questionnaire which includes Name, Age, Sex, Occupation. Religion, Monthly income, Academic qualifications, co-morbidity. The form also contains different physical signs found on examination ranging from also contains different physical signs found on examination ranging from general examination systemic examinations. As this study renders primary importance to ischemic stroke, abdominal obesity measured by waist to hip ration and other co-morbidity, an these data have been structured to be recorded in special manner. The admitted patients were investigated for their presenting disease or co-morbidity, by routine tests and by relevant test like CT scan of brain, ECG, RBS, Fasting lipid profile, serum creatinine etc. all of them have been recorded at the end of the form putting them under relevant headings. Finally the date of data collection has been included at the bottom of the structured computerized form.

Data Processing Analysis and Interpretation:

After complication of data, the obtained data were checked, verified. edited and coded. As described previously all the data were recorded in a computerized structured form. A single form was allocated for a single patient. After registering the personal information. Examination findings and investigation findings of the patients each form has been saved as a distinct file in a definite folder of a specific computer. After achieving the target number of patient within the study time. The obtained data were analyzed and statistical evaluation was performed by SPSS program.

Results

Out of 102 patients of this study 75 (73.52%) were males and 27 (26.48%) were females; Male to female ratio was 2.8:1. It was found that 52 (50.98%) patient was above 60 years of age 31 (30.39%) in the age group of 50-59 years. 15 (14.71%) in the age group of 40-49 years, 3 (2.94%) in

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the age group of 30-39 years, 1 (0.98%) in the age group of 20-29% years. From the age distribution of the patients, It was found that highest number of patient i.e. 52 (50.98%) patients was in the age group above 60 years (Table-1, 2).

Table 1: Distribution of the patients by sex (n=102).

Sex	Number	Percentage
Male	75	73.52%
Female	27	26.48%

Table 2: Age distribution of the patients under study (n=102)

Age group (years)	Number	Percentage
< 20	0	0%
20-29	1	0.98%
30-39	3	2.94%
40-49	15	14.71%
50-59	31	30.39%
60 years & above	52	50.98%

Distribution of patients by comorbidity (n=96)

Comorbidity was present in 96 (94.12%) patients. In 6 (5.88%) patients no specific comorbidity could be established by the time of data recording. Of 96 comorbid patients it is obvious that hypertension is the most common comorbidity (77.08%). The next common associations are smoking (37.5%), diabetes (15.62%) and hyper lipedemia (10.41%) (Table-3).

Multiple comorbity were also observed in some patients.

Table 3: Distribution of patients by their comorbidity (n=96)

Comorbidity	Number	Percentage
Hypertension	74	77.08%
Smoking	36	37.50%
DM	15	15.62%
Hyper lipidemia	10	10.41%
Valvular heart disease	1	1.04%

Distribution of patients by their blood pressure (n=102)

Blood pressure of every patient of this study was recorded as systolic and diastolic blood pressure. No patient possessed systolic blood pressure below 100 mm Hg. 35 (34.31%) patients were in the group of 140-159 mm Hg. 31 (30.39%) were in the group of > 179 mm Hg, 16 (15.68%) were in the group of 160-179 mm Hg, 14 (13.72%) were in the group of 120-139 mm Hg and 6 (5.88%) were in the group of 100-119 mm Hg. So majority of the patients systolic blood pressure was between 140 and 159 mm Hg. Regarding diastolic blood pressure no patient was found to hare blood pressure less than 70 mm Hg. 36 (35.29%) patients possessed diastolic blood pressure between 90-99 mm Hg, 28 (27.46%) between 80-89 mm Hg, 14 (13.72%) between 110-119 mm Hg, 12 (11.76%) between 100- 109 mmHg. 6 (5.88%) more than 119 mm Hg and 6 (5.88%) between 70- 79 mm Hg (table-4,5).

In this series majority of diabetic patients (53.33%) were regularly treated. All (100%) patients were type II diabetic (Table-6).

Table 4: Distribution of patients by their systolic blood pressure (n=102)

Systolic BP (mm Hg)	Number	Percentage
< 100	0	0
100-119	6	5.88%
120-139	14	13.72%
140-159	35	34.31%
160-179	16	15.68%
> 179	31	30.39%

Table 5: Distribution of patients by their diastolic blood pressure (n=102)

Diastolic BP (mm Hg)	Number	Percentage
< 70	0	0
70-79	6	5.88%
80-89	28	27.46%
90-99	36	35.29%
100-109	12	11.76%
110-119	14	13.72%
> 119	6	5.88%

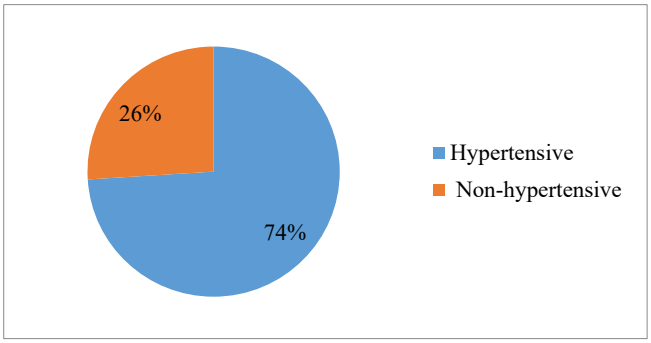

Figure-1: Distribution of patients on the basis of hypertension.

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Distribution of patients by their waist circumference (n=102)

Of 102 patients 42 (41.76%) patients waist measured between 80 and 89 cm. 24 (23.52%) patients were in the group of 90-99 cm, 14 (13.72%) patients were in the group of 70-79 cm, 13 (12.74%) patients were in the group of 60-69 cm. 6 (5.89%) patients were in the group of 100-102 cm and 3 (2.94%) patients were in the group of < 60 cm waist measurement. The mean hip circumference of the study people was 9.5 cm (Table-7).

Distribution of patients by their hip circumference (n = 102)

The result showed that hip circumference of 48 (47.05%) patients were between 80-89cm, 32 (31.37%) patients belong the group of 90-99cm, 18 (17.65%) patients fell in the group of 70-79cm, and 4 (3.92%) patient fell in the group of 60-69cm. The highest number the patient i.e. 48 (47.05%) patients belong to the hip circumference of 80-89cm (Table-8).

Table 6: Distribution of diabetic patients on the basis of treatment (n=15)

Treatment	Number	Percentage
Not treated at all	2	13.33%
Irregularly treated	5	33.34%
Regularly treated	8	53.33%

Table 7: Distribution of patients by their waist circumfrence (n=102)

Waist circumference	Number	Percentage
< 60 cm	3	2.94%
60-69	13	12.74%
70-79	14	13.72%
80-89	42	41.76%
90-99	24	23.52%
100-109	6	5.89%
110-119	0	0
> 114	0	0

Distribution of patients by their waist to hip ratio (WHR) (n = 102)

WHR was calculated for each patient the result of which shows that 65 (63.72%) patient had abnormal WHR while 37 (36.28%) patients had been found to possess normal WHR (Table-9).

Fate of the patients in the course of disease (n = 102)

Among 102 patients with stroke 63 patients got either partial or complete recovery from the disease, 24 patients showed no noticeable improvement and 15 patients expired (Table-10).

Table 8: Distribution of patients by their hip circumference (n=102)

Hip circumference	Number	Percentage
<60	0	0
60-69	4	3.92%
70-79	18	17.65%
80-89	48	47.05%
90-99	32	31.37%
100-109	0	0
110-119	0	0
> 119	0	0

Table 9: Distribution of patients by their waist to hip ratio (WHR) (n = 102)

Waist to Hip Ratio	Number	Percentage
Normal	37	36.28%
Abnormal	65	63.72%

Table 10: Fate of the patients in the course of disease (n = 102)

Fate of the patient	Number	Percentage
Partial recovery	45	44.12
Complete recovery	18	17.64
No improvement	24	23.53
Expired	15	14.71

Discussion

In this study an attempt has been made to find out the correlation of abdominal obesity measured by WHR with ischemic stroke and other risk factors on the patients (102 in number) was admitted to medicine units (unit IV & unit IX) of Dhaka Medical College Hospital, Dhaka in a given period time of Six months. The study population show that 73.52% patients were male and 26.48% patients were female. Clinical presentation of the study population varied in patient to patient. Major risk factors among these patients were identified and co-related. Majority of the patients in this study were of aged 50 years and above (81.37%) and peak age incidence was above 60 years group (50.98%). Only 18.62% of the patient was under 50 years and no case was found at or below age twenty years. In this study the frequency of stroke increases with increasing age, that co-relates with the result of similar studies in home and abroad [26]. In this study stroke affected males were 2.8 times more than female and the ratio being 2.8:1 which co-relates with other studies, [27] but a similar study by Mannan & Alamgir [28] showed significant difference (M:F = 4:1). The male female ratio is higher in our country than that of western countries. This preponderance male may be due to the cultural attitude of our society, that the female are not generally broad to the hospital, particularly the capital level hospital but in this

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study, the ratio has come down to a reasonable level, which reflect indirectly on improvement of the cultural attitude and as well as health consciousness in our society. In this study it is obvious that hypertension is the most common risk factor (77.08%) In another study in BIRDEM by Latif et. al. [29], 50.30% with NIDDM and stroke were also hypertensive. In a multi-factorial analysis of risk factors of ischemic strokes, found the association of hypertension in more than 60% patients [30], so all these national and international studies agreed that there is a strong association between hypertension and ischemic stroke. Majority of the patients of this study population (83.78%) were previously known hypertensive (Table 7). Newly daignosed case were only (16.22%). Among the diagnosed group most (62.16%) were taking antihypertensive medication irregularly. Chodhury et. al. [27], in their study on 78 known hypertensive patients who were suffering from stroke had shown that 92.45 percent were taking drug irregularly. In two separate studies of Mannad and Alamgir [28] and Chodhury et. al. [27], had shown that 80.7% & 34% of their hypertensive stroke patients, respectively were not aware that they were hypertensive. This implies the lack of awareness of the hypertension and its dreadful consequences causing significance morbidity and mortality. So, prevention, detection and proper management of hypertension along can bring down the incidence of stroke [31]. In this study 37.39% of stroke patients were found to be smoker, duration of smoking varied among the study group. In two separate studies, Yano Donovan have shown strong association between smoking and stroke [32,33]. Macfarlane et. al. [34], had concluded that combination of raised systolic blood pressure and cigarette smoking resulted in a more then 10 fold increase risk of developing stroke compared with that in normotensive and non smoker. In this study there is also a significant association of smoking with stroke. In this study (15.62%) of the stroke patients were found to be diabetes mellitus among which 53.33% patients were getting regular treatment, 33.34% were getting irregular treatment and 13.33% were detected 1st time after admission. All the diabetic patients were NIDDM type. Another study [35] has shown that 10.14 percent of stroke patients were diabetic. The copenhagen stroke study showed 20% stroke patient has diabetes mellitus and diabetes influenced stroke in several aspects including age, subtypes and treatment. In a study at BIRDEM [29] on 165 cases of diabetic patients with stroke showed, majority of them developed stroke in less than 10 years duratio of diabetic. However, when all these conditions are present in a patient, the relative risk of suffering from stroke is grater [35]. But unfortunately there is no convincing evidence that metabolic control of diabetes mellitus reduce the risk of stroke. Among the study group (10.41%) were hyperlipidaemic. We know atherosclerosis play an improtant role in the pathogenesis of stroke, Shuaib et. al. [36] concluded that progressive carotid atherosclerosis, cardiac arrhythmia and embolic vascular changes all contribute to the increase incidence of stroke particularly in the elderly. In this study only 1.04% patients were found to hare embolic stroke due to valvular heart disease. Manuel [37] has shown that ischemic stroke due to cardiac embolism ranges from 19 to 75 percent in patients with atrial fibrillation. In this study the abdominal obesity define by WHR shows that 63.72% patients had abnormal WHR, while only (36.28%) patients had been found to have this with in normal limit and the mean no comparable data for Bangladeshi people were found for an evaluation. This study show a significant but not independent association between ischemic stroke and abdominal obesity as defined by an elevated WHR. Vague first suggested that atherosclerotic risk was higher in those with abdominal obesity compared with lower body obesity. Other investigators also have reported that abdominal fat distribution is highly related to an increased prevalence of cardiovascular risk factors [38]. The measurement of waist circumference alone is a simple indicator of abdominal obesity but has not been found to be a good predictor of stroke in this and other studies [14, 19, 22]. The effect of WHR was apparent after controlling for BMI, in fact, BMI had a slight inverse association with ischemic stroke. This findings has been noted by others [22]. In some studies, current smoking heavy alcohol drinking [12] may lead to reduced BMI and an increase in the risk of stroke and therefore confound the association between BMI & stroke moreover, weight or BMI can decrease with age because of a loss of lean body mass [22] and a measurement of WHR may be a more useful method to assess abdominal fat accumulation and a better predictor of an increased risk for stroke then BMI or waist circumference. The strength of the association between abdominal obesity and ischemic stroke in our study was as great as that observed for definite hypertension, smoking, diabetes mellitus and hyperlipidaemia. In some cohort studies, WHR was no longer risk factor for stroke after adjustment for hypertension and blood lipids or diabetes but the number of events in these studies was small [15,21]. These studies also failed to differentiate between infarction and hemorrhage as separate outcome' [19,21,38]. The distribution of WHR differed by sex, with grater values in men, in our study and other studies. It is not clear, however, whether the impact of abdominal obesity on ischemic stroke is different by sex. In our study among the 102 patients with stroke, 63 patients got either partial or complete recovery from the disease and was discharged with appropriate medications and advices, 24 patients showed no noticeable improvement and 15 patients expired.

Conclusion

Stroke is one of the commonest cause of death and disability in the world. Early detection and correction of risk factors, particularly the major modifiable risk factors is the mainstay of controlling stroke.The present descriptive

hospital based prospective study was carried out in Dhaka Medical College Hospital to see the association of abdominal obesity defined by WHR with ischemic stroke and other risk factors and the result of the study was compared with similar types of studies carried out at home and abroad. This study also reveals that abdominal obesity define by waist to hip ratio (WHR) is also strongly linked to ischemic stroke but several limitation of this study design deserve discussion. The population based approaches of this study, however and the matching by age, sex and race-ethnicity help to minimize the potential biases. However, the current study was conducted on a small group of patients (102 cases) and its result shows an association with ischemic stroke. This association may be evaluated further through conduction of similar study on larger scale considering above mentions limitations.

Conflict of Interest: None.

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References

1. World Health Organization. The world health report 2003: shaping the future. World Health Organization (2003).
2. American Heart Association. Heart Disease and Stroke Statistics-2004 Update. Dallas, Texas (2003).
3. Adams H, Adams R, Del Zoppo G and Goldstein LB. Stroke Council of the American Heart Association; American Stroke Association. Guidelines for the early management of patients with ischemic stroke: 2005 guidelines update: a scientific statement from the Stroke Council of the American Heart Association/American Stroke Association. Stroke 36 (2005): 916-923.
4. Gorelick PB. Stroke prevention. Arch. Neuro., 52 (1995): 347-355.
5. National Center for Health Statistics. Prevalence of overweight and obesity among adults: United States, 1999. Available at: http://www.cdc.gov/nchs/products/pubs/pubd/hestats/obese/obse99t able2.htm. Accessed December 6 (2001): 5.
6. Bur-ton BT, Foster WR, Hirsch J, Van Itallie TB. Health implications of obesity: an NIH consensus development conference. Int J Obes 9 (1985): 155-169.
7. Must A, Spadano J, Coakley EH, et al. The disease burden associated with overweight and obesity. JAMA 282 (1999): 1523-1529.
8. National Heart, Lung, and Blood Institute. The Practical Guide: Identification. Evaluation, and Treatment of Overweight and Obesity in Adults. Available at: http://www.nhlbi.nih.gov/guidelines/obesity/practgde.htm Accessed February 2 (2002).
9. Hubert IIB, Feinleib M, McNamara PM, Castelli WP. Obesity as an independent risk Factor for cardiovascular disease: a 26-year follow-up of participants in the Framingham Heart Study. Circulation 67 (1983): 968-977.
10. Eraser GE, Strahan TM, Sabate J, et al. Effects of traditional coronary risk factors on rates of incident coronary events in low-risk population. Circulation 86 (1992): 406-413.
11. Willett WC, Manson JE, Stampfer MJ, et al. Weight, weight change, and coronary heart disease in women. JAMA 273 (1995): 461-465.
12. Calle EE, Thun MJ, Petrelli JM, et al. Body- mass index and mortality in a prospective cohort of U.S. adults. N Engl J Med 341 (1999): 1097-1105.
13. Lee J-M, Manson JE, Hennekens CH, et al. Body weight and mortality. JAMA 270 (1993): 2823-2828.
14. Lindsted KD, Singh PN. Body mass and 26-year risk of mortality among women who never smoked: findings from the Adventist Mortality Study. Am J Rpidemiol 146 (1997): 1-11.
15. Singh PN, Lindsted KD. Body mass and 26-year risk of mortality from specific diseases among women who never smoked. Epidemiology 9 (1998): 246-254.
16. Schule H, Cullen P, Assmann G. Obesity, mortality and cardiovascular diseases in the Munster Heart Study (PROCAM). Atherosclerosis 144 (1999): 199-209.
17. Prineas RJ, Folsom AR, Kaye SA. Central adiposity and increased risk of coronary disease mortality in older women. Ann Epidemiol 3 (1993): 35-41.
18. Rimm EB, Stampfer MJ, Giovannucci E, et al. Body size and fat distribution as predictors of coronary heart disease among middle-aged and older US men. Am J Epidemiol 141 (1995): 1117-1127.
19. Abott RD, Behrens GR, Sharp DS, et al. Body mass index and thromboembolic stroke in nonsmoking men in older middle age: the Honolulu Heart Program. Stroke 25 (1994): 2370-2376.
20. Rexrode KM, Hennekens CH, Willette WC, et al. A prospective study of body mass index, weight change, and risk of stroke in women. JAMA 227 (1997): 1539-1545.
21. Folsom AR, Prineas RJ, Kaye SA, et al. Incidence of hypertension and stroke in relation to body fat distribution and other risk factors in older women. Stroke 21 (1990): 701-706.
22. Lapidus L, Bengtsson C, Larsson B, et al. distribution of adipose tissue and risk of cardiovascular disease and deatth: a 12 year follow up of participants in the

population study of women in Gothenburg, Sweden. BMJ 289 (1984): 1257-1261.

23. Suk SH, Sacco RL, Boden- Albala B Cheun JF, et al. Northern Manhattan Stroke Study. Abdominal obesity and risk of ischemic stroke: the Northern Manhattan Stroke Study. Stroke. 34 (2003): 1583-1592.

24. Lindenstrom E, Boyesen G, Nyboe J. Lifestyle factors and the risk of cerebrovascular disease in women: the Compenhagen City Stroke Study. Stroke 24 (1993): 1468-1472.

25. Larsson B. Svardsudd K, Welin L, Withelmsen L, Bjorntorp P, Tibblin G. Abdominal adipose tissue distribution, obesity, and risk of cardiovascular disease and death: 13 years follow up of participants in the study of men born in 1913. BMJ. 1984; 288: 1401-1404.

26. Walker SP, Rimm EB, Ascherio A, et al. Body size and fat distribution as predictors of stroke among US men. Am J Epidemiol 144 (1996): 1143-1150.

27. Chowdhury SGM, Ahmed Q, Dhan FD, et al. Stroke in patients having inadequate or irregular antihypertensive therapy. Bangladesh Med Res Coun Bull XVI (1990): 52-57.

28. Alamgir SM, Mannan MA. Cerebrovascular disease (A report of 53 cases). Bangladesh Med Res Coun Bull 1 (1975): 45-50.

29. Latif ZA, Zaman SM, Ahad A, et al. Study of stoke between normotensive and hypertensive NIDDM cases in BIRDEM, Dhaka, Bangladesh, J. Neurosci 6 (1990): 52-56.

30. "Effect of thiazolidinediones on body weight in patients with diabetes mellitus". Am. J. Med. 115 Suppl 8A: 42S-48S.

31. Rahman HJ, Mannan MA, Haque A. Prognosis of acute stroke. Bangladesh J Neurosci 3 (1987): 42-47.

32. Yano K, Reed DM, Yin Y, Abbott RD. Risk of stroke in male cigarette smokers. N? Engl. J. Med 315 (1986): 717-720.

33. Donnan AG. Mcneil JJ, Adena AM, et al. Smoking as a risk factor for cerebral ischaemia. Lancet 16 (1989): 143-647.

34. Macfarlance PW, Walker M, Pocker SJ, et al. Risk factors for stroke in Middle aged british men. Br Med J (1991): 1111-1115.

35. Thompson SBn, Morgan M, editors. Epidemiology of stroked. In: Occupational Therapy for stroke rehabilitation, 1st ed. London: Chapman and Hall, (1990): 1-14.

36. Leppala JM, Virtamo J, Fogelholm R, et al. Different risk factors for different stroke subtypes: association of blood pressure, cholesterol, and antioxidants. Stroke, 30 (1999): 2535-2540.

37. Manuel BM, Mckermott MW, Amorisino SC, Atrial fibrillation risk maker for stroke. N. Engl. J. Med 323 (1990): 1556-1558.

38. Goldstein LB, Adams R. Becker K, et al. AHA Scientific Statement: primary prevention stroke: a statement for healthcare professionals from the Stroke Council of the American Heart Association. Stroke 32 (2001): 280-299.

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Discussion

This study was undertaken to evaluate the aetiological pattern of upper abdominal pain in patients admitted in medicine units, to find out different etiological pattern of upper abdominal pain, to find out the number of patients getting admitted with upper abdominal pain is medicine units of SSMC & Mitford hospital, to identify the number of endoscopically proved peptic ulcer disease as a cause of upper abdominal pain. Selection of patients for the study were made randomly on the basis of upper abdominal pain having age more than 12 years irrespective of their sex and education, and patient willing to participate in this study. In this prospective study, some investigations are done routinely for all patients, particularly emphasing on endoscopy of upper gastrointestinal tract and ultra-sonogram of the whole abdomen and some selective investigation were done for the selective patients. Only the patients having endoscopically confirmed ulcer in the stomach or duodenum were labelled as PUD. In the present series 38% of subjects had no organic disease with a male and male ratio of 1:1.71% Among the patients getting admitted in medicine units of SSMC and Mitford hospital, 1.89% patients were presented with upper abdominal pain in whom 55% were male and 45% were female. Quite a good number of diseases could be diagnosed in subjects presented with upper abdominal pain. Peptic ulcer disease topped of the list. This was also the commonest organic case (36%), it was more prevalent in males with male and female ratio of 3:1 [8]. Among the patients with PUD, 77.78% had duodenal ulcer and 22.22% had gastric ulcer. Male and female ratio in cases of duodenal and gastric ulcer were l2.5:1 and 7:1 respectively;. It appeared that the diagnosis of PUD may be reasonably excluded when periodicity, relief of pain by food or antacids, pointing sign on epigastric tenderness were absent. However, they may occur in patient without PUD (low specificity). Aggravation of pain by the intake of food was more common, as reported by other workers [9,10,11]. It appears that positive diagnosis of PUD cannot be made by the present of indivudal symptoms. Sensitivity of pointing sign and epigastric tenderness is low because both can be present in PUD, IBS, NUD, a fact that indicating that they are of little value in distinguishing among these diseases. The mean age of the patients was 40.04 years and 52.06 years in case of duodenal ulcer and gastric ulcer respectively. This age incidence correlates with common age of peptic ulcer disease as shown by various workers [12]. Sheppard et al [13]. In 1987 showed higher age incidence in western people. The ratio between duodenal ulcer and gastric ulcer was 3.5:1 which is higher than western world. In United Kingdom it was 2.3:1. In Indian population it was higher 12.13:1 [14,15]. The much lower ratio in this series may possibly be explained by the correct localization of the ulcer after recent advancement of diagnostic technique that is by direct visualisation of the ulcer point through a fiber optic endoscope. In this series, NUD was common cause after PUD, 20% subject had NUD with male and female ratio of 1:1.86. NUD is at least twice/as common as PUD [16]. But in the present series it ranked second in order of frequency after PUD. This discrepancy may probably be explained by the fact that most patients of upper abdominal pain (days peptic symptoms) do not get admitted in hospital but consult with local doctors or treated themselves by self-medication. The mean age of presentation was 39.55 years which is higher than usual presentation of NUD according to most workers [17]. Female predominance in incidence in this series is consistent with other studies. Irritable bowel syndrome ranked third in order of frequency (18%). IBS was more common in female with male and female ratio 1: 1.57. Predominantly constipating type was more common (61.11%). Among the non-organic causes of upper abdominal pain IBS is the second of the list representing (18%) in the western societies where IBS is the commonest gastrointestinal syndrome [18,19,20]. IBS patients also complained of nocturnal pain [21, 22]. Mean age of presentation of IBS is 37.38 years. It is consistent with the usual age of presentation of IBS in studies of different workers [23]. IBS was common in young female patients [24]. Helminthiasis was found to be a cause of upper abdominal pain 2% had helminthiasis. Helminthiasis is considered to be a common cause of upper abdominal pain in Africa [25]. Pancreatitis is very important cause of upper abdominal pain. In this series 6% were acute Pancreatitis and 4% were chronic Pancreatitis. This incidence is higher than previous incidences of western country [26]. Both acute and chronic Pancreatitis is more common in male with male female ratio of 2:1 and 3:1 respectively. This is can be explained by increased incidence of alcohol misuse. Cholelithiasis is another important cause of upper abdominal pain. In this series this was 6% with a male and female ratio 1: 2. In this series, this data are lower than developed country where the overall incidence is 11% [27]. In this series some other causes of upper abdominal pain were identified including gastric carcinoma (2%), liver abscess (2%), acute cholecystitis (2%) chronic cholecystitis (2%). PUD is the most common organic cause of recurrent dyspeptic symptoms is many countries [28,29]. Most patient presenting with the symptom suggestive of peptic ulcer could be correctly diagnosed solely on clinical basis was emphasized by Moynihan [30,31]. In this series 36% patient was endoscopically proved peptic ulcer disease. This finding are consistent with those of other workers [32, 33,34]. In this analysis of 2000 unselected Gastroenterology out patients in frenchey hospital, Bristol 47.5% had no organic disease. Peptic ulcer disease topped the list of organic disorder and represented 9.9% of all patients. Next in order were gastroesophageal reflex disorder (GERD), Inflammatory bowel syndrome topped the list of functional disorder

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representing 27.8% of all patients followed by non-ulcer dyspepsia (3.05%). In a study of 248 patients with upper abdominal dyspeptic symptoms but without peptic ulcer 75 (30%) had IBS, 71 (29%), GERD, 63 (25%) had IBS along with GERD, 14 (6%) had gallstones and 25 (10%) had aerophagy. Upper abdominal pain has been reported in substantial proportion of IBS patients by several workers [35,36,37]. Thus IBS seem to be a common cause of upper abdominal symptoms. Majority of patients in this series had burning type of abdominal pain (40%) [38]. 61.11% of PUD patients and 65% of NUD patients had burning type of abdominal pain [39]. Colicky abdominal pain occurred in 14% of patients; most of them (10%) had IBS. Upper abdominal pain localised to epigastrium were present in 51% of patients and most of them (25%) had PUD [40]. 10% patients presented with epigastric pain had NUD [41]. Simultaneous epigastric and right hypochondriac pain occurred in 22% of patients and 14% of patients had periumblical pain. Most of them (12%) had IBS. 69.44% of PUD patients had epigastric pain, 66.67% of patients with IBS had periumblical pain and 50% of NUD patients had epigastric pain. Nocturnal pain was predominantly associated with PUD (41.67%). It was also experienced by 16.67% of patients with IBS. Majority of patients with IBS (66.67%) developed pain after taking food .55.56% of PUD patients develped pain in empty stomach. 37%, 32% and 18% patients had pain in empty stomach, pain after meal and nocturnal pain respectively. Food relative pain is 63.89% and 80% patients with PUD and NUD respectively. Pain subsided after taking antacids in 86.11% and 90% patients with PUD and NUD respectively. Bowel movement relieved pain in all patients of IBS [42]. Food aggravated pain in 88.89% of patients with IBS and 100% patients of gastric carcinoma. It also aggravated pain within 50%, 50% and 19.44% patients with Cholelithiasis, chronic pancreatitis and PUD respectively. Most of the patients (69.44%) of peptic ulcer disease had epigastric tenderness. 66.67% and 45% of patients with IBS and NUD respectively had no abdominal tenderness [43,44,45]. In PUD patients, all of them had upper abdominal pain and 61.11% had heart burn, 25% had history of hematemesis and/or melaena, 69.44% had epigastric tenderness 55.56% had positive pointing sign, 69.44% had periodicity, 41.67% had nocturnal pain. Pointing sign was also positive in 44.44% and 25% of patients with IBS and NUD.

Conclusion

An attempt has been made to evaluate the cause of the patients with upper abdominal pain of various duration, concrete conclusion could not be made after reviewing such as small number of cases as they are not the representative of the whole population of the country. Though there is some variation of age and sex incidence compared with western studies, the result in some instances, e.g symptomatology and physical signs, correlates with their results. There can be no doubt that whatever the mode of presentation, if can be diagnosed both clinically and by investigation then the correct management of cause will definitely ameliorate the condition of the patient. In conclusion it may be asserted that majority of patients with upper abdominal pain do not have peoptic ulcer. Functional gut disorder is common causes of upper abdominal pain. A carefully taken history and its rationed intepretation may help diagnosis. The simple means like explanation, reassurance and dietary advices may save a lot of anticids, H_2 blocker and proton pump inhibitors in many cases.

References

1. Melzack R, Torgerson WS, on the language of pain. Anesthesiology 34 (1971): 50.
2. Melzack R. Wall PD: Pain mechanisms: A new theory science. 150 (1965): 971-979
3. William L. Hosier, Chug Owyang, Harrison's Principles of Internal Medicine 284 (2008): 1832-1833.
4. Stephen J. Schueler, MD, John H. Beckett, MD; D. Scott getting, MD; Upper abdominal pain overview; No. 23 (2010).
5. John Del Valle, Harrison's Principles of internal Medicine 284 (2008): 1832-1833.
6. PD Faircolugh and DBA silk, Kumar and clark's clinical medicine.
7. K.R. Palmer, I.D Penman, J.D Collier, G. webster, Davidson's principles and practice of medicine 22; 876-877, 888-889, 23 (2010): 980-981.
8. Walkin son, Peptic ulcer incidence in sex (1960).
9. Talley NJ, Phillips SF, Melton LJ, et al. A Patient Questionnaire to Identify Bowel Disease, Ann Int. Med lll (1981): 67-64.
10. Talley NJ, Phillips SF, Bruce B, et al. Relation Among Personality and Symptoms in non-ulcer dyspepsia and the Irritable Bowel Syndrome Gastroenterology 99 (1990): 327-333.
11. Talley NJ, Phillips SF, Melton J, et al. Diagnostic value of the Manning criteria in irritable bowel syndrome. Gut 31 (1990): 77-81.
12. Edwards, F.C. and Coghill, N. F. Clinical manifestations in patients with chronic atrophic gastritis, gastric ulcer, and duodenal ulcer. Quarterly, J of Med. 37 (1963): 337-360.
13. Sheppard MG, Holmes GKT, Cockel R. Clinical picture

of peptic ulcer diagnosed endoscopically. Gut 18 (1977): 524.

14. Tovey, F. Peptic ulcer in India and Bangladesh. Gut. 20 (1979): 329-347.

15. Malhotra, SL. Peptic ulcer in India and its aetiology: Gut, 5 (1973): 555.

16. Talley NJ. Phillips SF. Non-ulcer dyspepsia: potential causes and pathophysiology. Ann of Internal Med 108 (1988): 865-879.

17. Hausken T. Berstad A. Wide gastric antrum in patients with non-ulcer dyspepsia. Effects of cisapnde. Scand J Gastroenterol (1992): 305-280-2.

18. Harvey RF, Salih SY, Read AE. Organic and functional disorders in 2000 Gastroenterology outpatients. Lancet Marl 9 (1983): 632-634.

19. Mollman KM, Bonnevie O, Gudmand-Hoyer E, Wulff MR.Nosography of X-ray negative dyspepsia. Scand J Gastroenterol ll (1976): 193-197.

20. Moriarty KJ, Dawson AM. Functional abdominal pain; further evidence that whole gut is affected. Br. Med J (Dlin Res) 284 (1982): 1670-1672.

21. Islam M Nazrul. Clinical picture of endoscopically proven peptic ulcer in Bangladesh. Bang Med J 10 (1982):134.

22. Talley NJ, Phillips SF, Melton LJ, Wiltgen C, Zinsmeister AR. A Patient Questionnaire to Identify Bowel Disease, Ann Int. Med lll (1981): 67-74.

23. Manning AP, Thompson WG, Heaton KW, Morris AF. Towards positive diagnosis of the irritable bowel. Br Med J 2 (1978): 653- 654.

24. Swarbrick ET, Hegarty JE, Bat L, Williams CB, Dawson AM. Site of pain from irritable bowel. Lancet 2 (1980): 443-446.

25. Holcombe C. Aetiology and management of dyspepsia in Africa. Tropical Doctor 21 (1991): 107-112.

26. K.R.Palmer, ID. Panman, Davvidson's principals and practice of medicine 22 (2010): 888-889.

27. J.D Collier, G. Webster, Davidson, principal of practice of medicine 23 (2010): 977-978.

28. James LA, George NS, John FM, Eric JS. Diagnosis of peptic ulcer. In: Bocus HL (editor), Gastroenterology, 4th ed. Philadelphia: W. B. Saunders (1985): 1060-1115.

29. HL. Clinical and diagnostic aspects of uncomplicated peptic ulcer. In Bocus, HL. ed, Gastroenterology, Philadelphia, W.B. Saunders (1976): 619-647.

30. MoynihanBGA. Duodenal ulcer. Philadelphia, Saunders (1912).

31. Moynihan EGA. On duodenal ulcer: with notes of 52 operations Lancet 1 (1905): 340.

32. Rottar JI. Gastric and duodenal ulcer is each may different diseases. DiagDisSci 26 (1981):154.

33. Tarpila S, SamloffJM, Pikkarainein, et a!, Endoscopic and clinical findings in first degree relatives of duodenal ulcer patients and control subjects. Scand J Gastroenterol 78 (1982): 1147.

34. Talley NJ, Me Neil D, Hayden A, et al. Prognosis of chronic unexplained dyspepsia. A prospective study of potential predictor variables in patients with endoscopically diagnosed non-ulcer dyspepsia. Gastroenterology 92 (1987): 1060.

35. Islam M Nazrul. Clinical picture of endoscopically proven peptic ulcer in Bangladesh. Bang Med J 10 (1982): 134.

36. Talley NJ, Phillips SF, Bruce B, Twomey CK, Zinsmeister AH, Melton LJ. Relation Among Personality and Symptoms in non-ulcer dyspepsia and the Irritable Bowel Syndrome Gastroenterology 1990; 99:327-33.

37. Talley NJ, Phillips SF, Melton LJ, Wiltgen C, Zinsmeister AR. A Patient Questionnaire to Identify Bowel Disease, Ann Int. Med lll (1981): 67-64.

38. Khosla, AM. Peptic ulcer in India. Asian Med J 24 (1981): 809.

39. Bates S. Sjoden PO, Fellinus J, Nyrin O_j31ocked and non-blocked acid secretion and reported pain in ulcer, nor ulcer dyspepsia, and normal subjects, Gastroenterology 97 (1989): 376.

40. Islam M Nazrul. Clinical picture of endoscopically proven peptic ulcer in Bangladesh. Bang Med J 10 (1982):134.

41. Jorgensen LS, Banlokke L, Wamberg P. Non-ulcer dyspepsia, Aspects of pain. Scand J Gastroenterol 20 (1985): 46.

42. Khosla, AM. Peptic ulcer in India. Asian Med J 24 (1981): 809.

43. Bates S. Sjoden PO, Fellinus J, Nyrin O_j31ocked and non-blocked acid secretion and reported pain in ulcer, nor ulcer dyspepsia, and normal subjects, Gastroenterology 97 (1989): 376.

44. Islam M Nazrul. Clinical picture of endoscopically proven peptic ulcer in Bangladesh. Bang Med J 10 (1982):134.

45. Jorgensen LS, Banlokke L, Wamberg P. Non-ulcer dyspepsia, Aspects of pain. Scand J Gastroenterol 20 (1985): 46.