

PROFILE OF PEPTIC ULCER DISEASE IN MALAYSIA

M V Kudva, Thein-Htut

SYNOPSIS:

A total of 1,688 non-repeat upper gastrointestinal endoscopies performed over a 33-month period from April 1985 to December 1987 at a University Medical Unit in Kuala Lumpur was analysed for a profile of peptic ulcer disease amongst Malaysians.

There was a total of 360 peptic ulcer patients with a gastric ulcer to duodenal ulcer ratio of 1 : 1. The male : female ratio was 2.8 : 1 for duodenal ulcer and 1.8 : 1 for gastric ulcer, and 2.3 : 1 for peptic ulcer overall. In both sexes, gastric ulcers were seen at an older age group compared to duodenal ulcers.

Of the three main Malaysian ethnic groups of Malays, Chinese and Indians, Chinese of both sexes had the highest frequency of gastric ulcers. Chinese females had the highest frequency of duodenal ulcers.

SING MED J. 1988; 29: 544 — 547

INTRODUCTION

A geographical variation exists in the prevalence and incidence of peptic ulcer with also differences in the relative frequencies of duodenal and gastric ulcers (1). There also appears to be ethnic variations in the incidence of peptic ulcer. There have been reports from neighbouring Singapore that Chinese of both sexes have a higher susceptibility to peptic ulcer (2).

There have been very few reports on the pattern of peptic ulcer in Malaysia (3). We have collected endoscopic data at a University medical unit in Kuala Lumpur, Malaysia and analysed it for the profile of peptic ulcer disease.

The patients with peptic ulcer are also compared with a control population comprising all patients undergoing endoscopy over the same period. The parameters studied include the mean age, age group incidence, sex ratio and racial composition.

METHODOLOGY

The patients were referred for upper gastrointestinal endoscopy with specific indications (dyspepsia, hematemesis etc) from a pool of general medical patients. They were either outpatients seen at the Department of Medicine, National University of Malaysia (NUM) or inpatients from the General Hospital, Kuala Lumpur. A total of 2158 endoscopies were performed over a 33-month period from April 1985 to December 1987 at our Endoscopy Unit. All the examinations were performed or supervised by either one of the two authors. The biodata and endoscopic findings were recorded, immediately after the endoscopy, into a standard register. The data was analysed retrospectively. The relevant data was entered into a mainframe computer at the Computer Centre, Faculty of Medicine and analysed using a SAS software package (4).

In the case of peptic ulcers, only the first endoscopic finding of peptic ulcer was considered. For non-peptic ulcer patients also, only the first endoscopy was considered. The remainder of the endoscopies were considered as repeat examinations and excluded from the study. This was to remove any bias, which might have resulted, if repeats were included. A total of 1688 cases of non-repeat endoscopies were thus obtained.

Peptic ulcer (PU) consisted of benign gastric ulcers (GU), duodenal ulcer (DU) or both benign gastric and duodenal ulcers in the same patient (GUDU). All gastric ulcers were biopsied and found to be benign before inclusion.

The 'all patients' group consisted of all the 1688 cases of non-repeat endoscopies including the peptic ulcer patients. PU, GU and DU were separately analysed. GUDU was not analysed separately because of the small numbers (16 cases). Race consisted of Chinese, Malays, Indians and others. 'Other races' were not analysed separately because of the small numbers (16 cases).

Out of 360 peptic ulcer patients, seen over the 33-month period of the study, 251 were referred from a pool of general medical patients seen at the Medical Unit, National University of Malaysia (NUM), Kuala Lumpur. This included both inpatients and outpatients. The remainder (109 patients) were referred from other units of the General Hospital, Kuala Lumpur. The only census available is that of the racial distribution of all general medical patients (both inpatients and outpatients) seen at the Medical Unit, NUM, over a 12 month period (1987). No figures are available in the NUM for earlier years nor are any figures available for the other units. We proceeded to compare the racial distribution of the peptic ulcer patients referred through the Medical Unit, NUM (251 cases) with the racial distribution of all general medical patients managed by the Medical Unit, NUM in 1987 (8698 cases). The Chisquare with Yates' correction when appropriate, was used for this comparison.

RESULTS

There were 360 cases of peptic ulcer out of a total of 1688 endoscopies (21.3 percent) (Table 1). The GU (172 cases) to DU (172 cases) ratio was 1 : 1.

SEX DIFFERENCES (Table 1)

The male : female ratio of PU was 2.3 : 1. The male : female ratio for DU was higher than that for GU (2.8 : 1 versus 1.8 : 1).

Department of Medicine, Faculty of Medicine,
National University of Malaysia, Jalan Raja Muda,
50300 Kuala Lumpur, Malaysia.

M V Kudva, MBBS (Malaya), MRCP (UK), MRCPI, Lecturer
Thein-Htut, MBBS (Rangoon), FRCP (Edinburgh), Lecturer

Correspondence to: Dr Kudva

Table 1.
PEPTIC ULCER IN MALES AND FEMALES

	Total	Male	Female	Male : Female
PU	360	250	110	2.3 : 1
GU	172	110	62	1.8 : 1
DU	172	127	45	2.8 : 1
'ALL PATIENTS'	1688	966	722	1.3 : 1

(16 PATIENTS WITH BOTH GU AND DU ARE NOT ANALYSED)

AGE (Tables 2, 3 and 4).

The mean age of the PU, GU and DU patients at presentation for endoscopy was between 50 and 56 years. The mean age for both GU and DU was higher in females as compared to males (GU: 54.8 years versus 52.4 years; DU: 55.5 years versus 50.6 years).

There was a gradual increase in the frequency of PU, as a percent of patients presenting for endoscopy, with age (Tables 3 and 4). For males this increase occurred from the 20 – 29 year age group until a peak was reached at the 60 – 69 year age group. For females the frequency gradually increased from the ≤ 19 year age group to reach a peak at the 60 – 69 year age group. There was

Table 2.
MEAN AGE OF PEPTIC ULCER PATIENTS AS COMPARED TO THE 'ALL PATIENTS' GROUP

	Male	Female	Male & Female
PU	50.8	55.2	52.2
GU	52.4	54.8	53.2
DU	50.6	55.5	51.9
'ALL PATIENTS'	45.4	42.4	44.1

Table 3.
PEPTIC ULCER AND 'ALL PATIENTS' BY AGE GROUP (MALES)

	'All Patients'	DU	GU	PU	% PU
≤ 19	33	2	2	5	15.2
20 – 29	175	15	8	25	14.3
30 – 39	189	20	15	38	20.1
40 – 49	175	22	18	44	25.1
50 – 59	175	26	25	52	29.7
60 – 69	135	21	31	54	40.0
≥ 70	84	21	11	32	38.1
TOTAL	966	127	110	250	25.9

DU: DUODENAL ULCER; GU: GASTRIC ULCER;
PU: PEPTIC ULCER;
% PU: PEPTIC ULCER AS PERCENT OF ALL PATIENTS OF THE SAME AGE GROUP AND SEX

a higher frequency of PU, as a percent of all endoscopies, among males as compared to females for all age groups. The lowest frequency was in females below the age of 40 years where less than one in 10 patients endoscoped had a peptic ulcer. This was particularly so for DUs, which were seen in only five females below 40 years as compared to 37 males below the same age. For duodenal ulcers the peak age, in absolute numbers of patients, was in the 50 – 59 age group for both sexes. For gastric ulcer the peak age occurred a decade later in the 60 - 69 age group for both sexes.

Table 4
PEPTIC ULCER AND 'ALL PATIENTS' BY AGE GROUP (FEMALES)

	'All Patients'	DU	GU	PU	% PU
≤ 19	37	1	0	1	2.7
20 – 29	173	2	3	5	2.9
30 – 39	143	2	9	11	7.7
40 – 49	110	6	9	15	13.6
50 – 59	117	16	13	30	25.6
60 – 69	89	11	18	31	34.8
≥ 70	53	7	10	17	32.1
TOTAL	722	48	62	110	15.2

DU: DUODENAL ULCER; GU: GASTRIC ULCER;
PU: PEPTIC ULCER;
% PU: PEPTIC ULCER AS PERCENT OF ALL PATIENTS OF THE SAME AGE GROUP AND SEX

RACIAL DISTRIBUTION (Table 5 and 6).

There was a significant difference in the racial distribution of male GU patients as compared to the general medical patients ($p < 0.025$). There was an even more significant difference in the racial distribution of female GU and DU patients ($p < 0.001$ and $p < 0.010$). This difference was accounted for by an excess of male Chinese GU patients and female Chinese GU and DU patients as compared to Malays and Indians.

Table 5
RACIAL DISTRIBUTION OF PEPTIC ULCER (UNIVERSITY REFERRALS ONLY) AND GENERAL MEDICAL PATIENTS IN MALES

	General Medical	Gastric Ulcer	Duodenal Ulcer
Chinese	1277 (28)	36 (42)	31 (35)
Malay	2105 (47)	31 (37)	39 (44)
Indian	1132 (25)	18 (21)	19 (21)
Total	4516 (100)	85 (100)	89 (100)
P	–	< 0.025	NS

PERCENTAGES IN BRACKETS

Table 6
**RACIAL DISTRIBUTION OF PEPTIC ULCER
 (UNIVERSITY REFERRALS ONLY) AND GENERAL
 MEDICAL PATIENTS IN FEMALES**

	General Medical	Gastric Ulcer	Duodenal Ulcer
Chinese	1302 (31)	29 (61)	17 (59)
Malay	1937 (46)	15 (31)	7 (24)
Indian	943 (23)	4 (8)	5 (17)
Total	4182 (100)	48 (100)	29 (100)
P	—	< 0.001	< 0.010

PERCENTAGES IN BRACKETS

DISCUSSION

In our series the ratio of duodenal ulcers (DU) to gastric ulcers (GU) was 1 : 1. In Africa, almost all the peptic ulcers are DU with the DU : GU ratio being 15 : 1 in Nigeria (5) and 25 : 1 in the Sudan (6). In India, the ratio of the mean of 25 reported case series was 12.4 : 1 (7). In South East Asia, there appears to be more GU's than DU's. In an Indonesian series it was 1.3 : 1 (8) whilst in Burma {unpublished observations by one of the authors (TH)} the ratio was 1 : 3. Surgical records in Singapore show that there are more gastric ulcers than duodenal ulcers. The DU : GU ratio was 1 : 2.1 and 1 : 1.3 (for perforated and non-perforated ulcers respectively) during the 1950's (9) and approximately 1 : 1.1 and 1 : 1.8 for the 1960's (10). Hence there appears to be a fall in the DU : GU ratio as one travels from Africa to South East Asia (11).

The male : female ratio for DU was 2.8 : 1 and for GU was 1.8 : 1. The male : female ratio tends to be higher in DU as compared with GU (12). This has been noted both in studies utilising age-specific death rates due to peptic ulcer (PU) in England (13) as well as by special surveys on PU in Denmark (14, 15) and United Kingdom (16, 17). Our figures are unlike those in areas where duodenal ulcers predominate (e.g. Indian and Africa) where almost all the patients are males (7, 18).

Gastric ulcers tend to occur at an older age compared to duodenal ulcers. In our series, there was a gradual increase in the number of DU and GU cases with increasing age-group until a peak was reached for DU at the 50 — 59 year age-group, whilst for GU this occurred a decade later (60 — 69 year age-group). This finding was true for both sexes. In the West, the peak age incidence for duodenal ulcers is between 45 and 55 years (19), whilst for gastric ulcers it is between 55 and 65 years (20). The peak age incidence for DU in India and Africa is a decade earlier than in the West (7, 18). The peak age frequency for our series corresponds more with reports from the West than those from Africa or India.

Females had a lower frequency of peptic ulcer (as a percent of all endoscopies) for all age-groups as compared to males. In females below 40 years, peptic ulcer

was seen in less than 10 percent of cases (range 2.7 to 7.7 percent). DUs are particularly uncommon in females below 40. A steep rise in the frequency of peptic ulcer (as a percent of all endoscopies) in females occurred after the age of 50. Hence peptic ulcer and in particular DU was a relatively uncommon finding in females below the age of 40. This was unlike in males where peptic ulcer was a relatively common finding (range 14.3 to 25.1 percent) at all age-groups below 50 years of age.

The mean age of both DU and GU patients was higher in females than males (difference of 4.9 years for DU and 2.4 years for GU), although the mean age of all female patients undergoing endoscopy was lower than that of males. The higher mean age of female PU patients was accounted for by the relative paucity of PUs in females below 40.

Malaysia consists of three main races: Malays (58%), Chinese (32%) and Indians (9%). There are wide variations in the racial distribution of the population in different regions (21). We did not use hospital admissions as a control population as different races might use these services differently. The general medical population would be better representative of the hospital catchment area. Comparing the peptic ulcer patients to this control population, we found that there was an increased frequency of GU in Chinese of both sexes, compared to Malays and Indians. The frequency of DU was increased only in Chinese females. Our findings are similar to that reported by Kang in Singapore (2) except that in our series the frequency of DU was not increased in Chinese males. In a study on perforated peptic ulcer in Malaysia, Said (3) noted that 46 out of 73 cases (63 percent) were Chinese but he did not compare it with a control population. It appears that Chinese are particularly susceptible to GU. When Kang compared Chinese of both sexes to non-Chinese, the odds ratio for incidence of GU was higher than for DU (2). Kang could not explain the increased frequency of peptic ulcers among Chinese in Singapore, as compared to Malays and Indians, by the use of analgesics, tobacco or alcohol (2). We did not look into these habits of our patients. The smoking prevalence in Malaysia is not well documented. Local studies by Teoh (22) suggest that some 21 — 56% of various population groups are smokers (e.g. soldiers, secondary school students). In another survey in 1985 in Ipoh, an urban area, Teoh (personal communication) found that 38% of males and 3.5% of females among 1800 admitted to being current smokers. The intake of alcohol is particularly high amongst the Indians with this racial group having the highest incidence of alcoholic liver cirrhosis in Malaysia (23). Malays being Muslims are forbidden by religion to consume alcohol. We do not have any data regarding the intake of analgesics among the various races in Malaysia. There are no racial differences in gastric acid secretion in DU patients (24). Studies on mucosal resistance among the races may help explain the particularly high incidence of gastric ulcers among the Chinese. Dietary studies would be helpful too as there are major cultural and religious differences in the dietary habits of the three races.

REFERENCES

1. Langman M J S. Epidemiology. In: Peptic Ulcer, Clinical Surgical International 1983; 7: 1-13, Churchill Livingstone.
2. Kang J Y, Labrooy S J, Yap I., et al. Racial differences in peptic ulcer frequency in Singapore. *Gast and Hep* 1987; 2: 239-44.
3. Said M Y. Perforated peptic ulcers in West Malaysia. A series of 73 cases treated by simple closure in a general hospital between 1972 and 1974. *Med J Malaysia*. 1982; 37: 267-4.
4. SAS User's Guide: Basics. Version 5 Edition. SAS Institute Inc. Box 8000, Cary, NC, USA.
5. Atoba M A. Endoscopy service in a developing country: problems and suggested solutions. *Trop Doctor* 1984; 14: 79-81.

6. Fedail S S, Araba B M O, Homeida M M, Ghandour Z M. Upper gastrointestinal endoscopy in the Sudan. Analysis of 2500 endoscopies. *Lancet* 1983; 2: 897-9.
7. Tovey F I. Peptic ulcer in India and Bangladesh. *Gut* 1979; 20: 329-47.
8. Pengarapen Tarigan, Zain L H, Marpaung B. Lokasi Tukak Peptik. In: Naskah Lengkap Kopapdi VI. Jakarta: Penerbit Universitas Indonesia, 1984; 1177-85.
9. Yeoh G S. Peptic ulcers, an analysis of 700 cases seen and treated at the Surgical Professional Unit, General Hospital, Singapore from the year 1949 to 1960. *Sing. Med. J.* 1961; 2: 127-37.
10. Ong S C & Yong N K. Experiences with surgical management of bleeding peptic ulcer in Singapore. *Aust. N. Z. J. Surg.* 1968; 37: 366-70.
11. Ong S C. Factors influencing early mortality and morbidity in peptic ulcer surgery. *Proceedings, Third Malaysian Congress of Medicine* 1967; 3: 159-63.
12. Shearman D J C & Finlayson N D C. Peptic ulceration. In: *Diseases of the Gastrointestinal Tract and Liver*, 1st Edition. Chapter 8, pp 134 — 68. Churchill Livingstone, 1982.
13. Coggan D, Lambert P, Langman M J S. Twenty years of hospital admissions for peptic ulcer in England and Wales. *Lancet* 1981; 1: 1302-4.
14. Bonnevie O. The incidence of gastric ulcer in Copenhagen County. *Scand J Gastroenterol* 1975; 10: 231-9.
15. Bonnevie O. The incidence of duodenal ulcer in Copenhagen County. *Scand. J. Gastroenterol* 1975; 10: 385-93.
16. Litton A, Murdoch W R. Peptic ulcer in South West Scotland. *Gut* 1963; 4: 360-6.
17. Pulvertaft C N. Peptic ulcer in town and country. *British Journal of Social and Preventive Medicine.* 1959; 13: 131-8.
18. Tovey F I, Tunstall M. Duodenal ulcer in black populations in Africa south of the Sahara. *Gut* 1975; 16: 564-76.
19. Watkinson, G. Geographical aspects of peptic ulcer. In: Card W I ed. *Modern Trends in Gastroenterology*, pp 23 — 48. Butterworths, London, 1961.
20. Richardson C T. Gastric Ulcer. In: Sleisenger M H & Fordtran J S ed. *Gastrointestinal Disease; Pathophysiology, Diagnosis, Management*, 3rd Edition, Chapter 41, pp 672 — 93. WB Saunders Co. 1983.
21. The Malaysians/Special Report. *Asiaweek* 1985 May 10; 38-64.
22. Teoh S K. Cigarette smoking in Malaysia. *Smoking and Health in South East Asia. Proceed UICC Regional Workshop, Singapore Cancer Society, Singapore*, 1981.
23. Ross I N, Dass P K. The spectrum of liver disease in Penang, A clinical and histological study. *Med. J Malaysia.* 1985; 40: 225-32.
24. Ti T K. Gastric acid secretion in duodenal ulcer disease in the Malaysia-Singapore region. *Ann. Acad. Med. Singapore* 1983; 12: 507-17.