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Epidemiologic Studies and Recent Changes of Peptic Ulcer Disease During the Past 10 Years : Study of 2548 Cases Collected During 1974 to 1983 in Hiroshima University Hospital

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ABSTRACT

In order to examine the annual changes of peptic ulcer disease in Hiroshima District, a total number of 2548 patients with peptic ulcer were studied during the period from 1974 to 1983.

From the results obtained, gastric ulcer (GU) was more common than duodenal ulcer (DU), and gastric ulcer combined with duodenal ulcer (GDU) was rare. The male to female ratio was 2.7 for GU, 5.0 for GDU and 3.4 for DU. There was a marked male preponderance in GU, GDU and DU. The male to female ratio of GU was surprisingly constant in all decades, while that of DU varied considerably between the different age groups, being on the highest 6.6 in the second decade.

There was no marked annual change in GU to DU ratio during the period from 1977 to 1983. On the other hand, it was shown that the male preponderance pattern had changed gradually in both GU and DU.

It is generally recognized that Japan is one of the few places where GU is more common than DU[12,15], although in most areas and ethnic groups of Western countries DU is more common than GU. However, recent Japanese report shows that DU has increased in Japan and GU to DU ratio has been reversed[10]. Even in Western countries, GU to DU ratio has changed during the last century[6]. Moreover, it is well known that both GU and DU are more common in males than in females, but recent epidemiologic studies from Western countries report that the male preponderance pattern has changed and the male to female ratio is now approximately equal[5,8,9,14].

The aim of this study is to clarify the recent changes of peptic ulcer disease in Hiroshima District, by analysing the incidence of endoscopically proven peptic ulcer during the past 10 years.

MATERIALS AND METHODS

The patients with GU, GDU and DU, who had been diagnosed by endoscopy at Hiroshima University Hospital from 1974 to 1983, were studies. These patients consisted of 1420 patients with GU, 198 with GDU and 930 with DU.

The mean age of male and female are shown in Table 1.

RESULTS

Figure 1 shows the age distribution and the

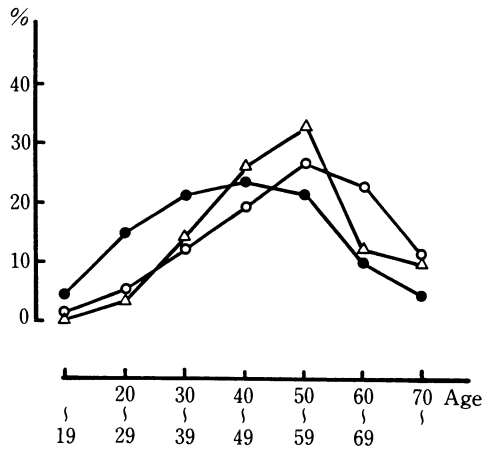
Table 1. Patients with peptic ulcer disease

Diagnosis	Sex	Number	Mean age	Total
GU	M	1034	52.63±13.83	1420
	F	386	53.44±14.36	
GDU	M	165	51.28±12.54	198
	F	33	52.12±12.83	
DU	M	717	43.09±14.89	930
	F	213	46.48±14.53	
Total	M	1916	48.94±14.84	2548
	F	632	51.03±14.69	

(1974—1983. Hiroshima University)

The peak age of DU is 10 years younger than that of GU and GDU. The male to female ratio of GU, GDU and DU are 2.7, 5.0 and 3.4. GU, GDU and DU are more common in males than in females.

Figure 2 shows the percent age distribution GU, GDU and DU. The percent of GU increases and that of DU decreases gradually with age. GU to DU ratio increases gradually from 0.3 in ages below 19 years old to 4.0 in ages above 70 years old. DU is more common than GU in patients less than 39 years, and GU is conversely more common than DU in ages over 40 years. In GDU there is a small increase with age (Fig. 3).



	n	%	M : F
GU	1420	55.7	2.7 : 1
GDU	198	7.8	5.0 : 1
DU	930	36.5	3.4 : 1

Fig. 1. Age incidence of peptic ulcer

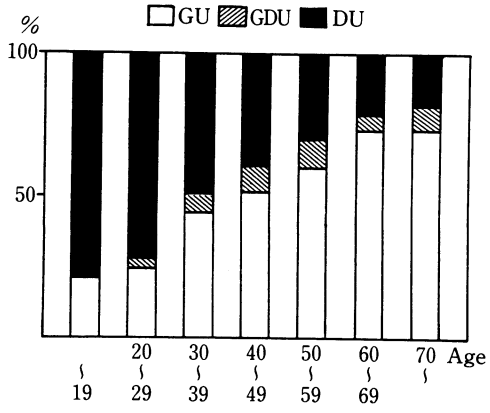


Fig. 2. Percent age distribution of peptic ulcer

male to female ratio of GU, GDU and DU. The peak age of GU and GDU are at 50 years and that of DU is at 40 years.

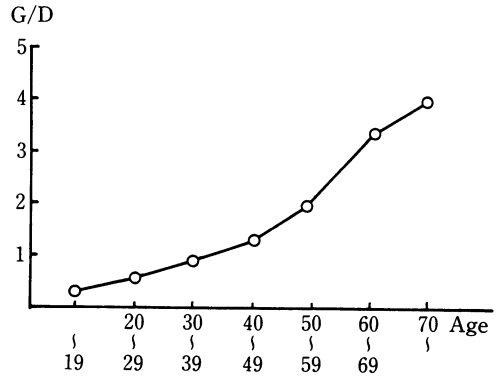


Fig. 3. GU to DU ratio by age

Figure 4 shows the male to female ratio of GU and DU by age. Both GU and DU are more common in males than in females in all decades. The male to female ratio of GU is surprisingly constant in all decades, while that of DU varies considerably within the different age groups. It is the highest in the second decade (6.6) and decreases gradually until 5th decade with slight reincrease in 7th decade (The average 3.4).

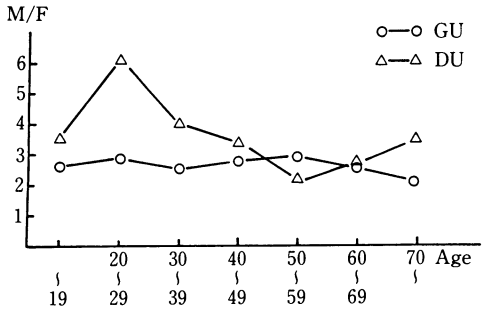


Fig. 4. Male to female ratio of GU and DU by age

Figure 5 shows the annual incidence of GU, GDU and DU during the period from 1974 to 1983. That of GU seems relatively constant during the period studied, while that of DU begings to increase slightly in 1977 possibly because of a widely spread use of forward-viewing panendoscope and is relatively constant thereafter. GU to DU ratio is from 1.1 to 1.6 between 1977 and 1983, being on the average 1.3. GU is more common than both DU and GDU through the period. There is no marked change of GU to DU ratio after 1977 (Fig. 6).

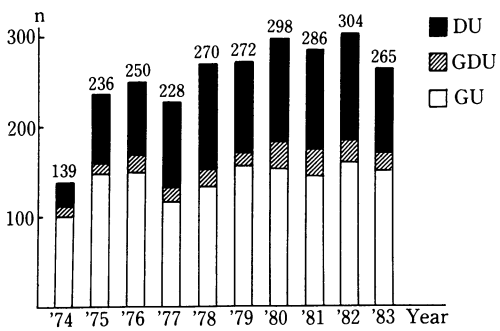


Fig. 5. Annual number of peptic uler

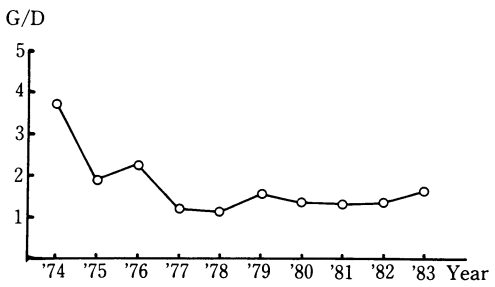


Fig. 6. Annual GU to DU ratio

Figure 7 shows that the male to female ratio of GU decreases gradually from 5.3 in 1974 to 2.0 in 1983 for GU and from 4.4 in 1974 to 2.2 in 1983 for DU. This decline is a little greater for GU than for DU.

Fig. 7. Annual male to female ratio of GU and DU

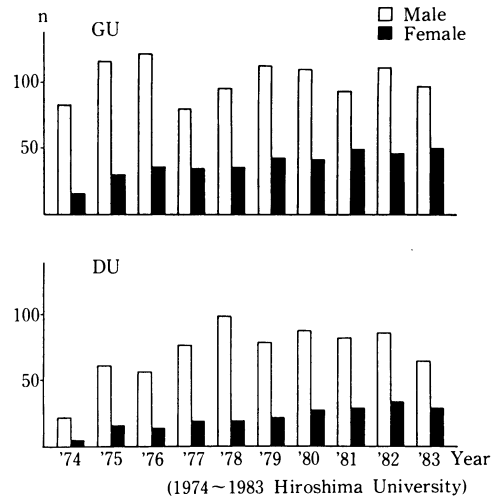


Fig. 8. Annual incidence of GU and DU in both sex

Figure 8 shows the annual incidence of GU and DU in both sex. There is a gradual increase of females and a small decrease of males in both GU and DU.

DISCUSSION

In Western countries, it is well known that the pattern of peptic ulcer frequency has changed greatly in the last century[6], especially in the distribution between GU and DU and in the age or sex difference. During the 19th century, GU was more common than DU in females. However, from the beginning of this century GU has decreased markedly in females and DU has increased markedly in males. Recently it is well known that DU is more common than GU in Western countries. Moreover, as to the sex distribution there was a marked female preponderance of about 5:1 in the 19th century. The sex ratio became equal in 1915, after which the male preponderance started. More recently, it is reported that the male preponderance has decreased in Western Countries because of the declined incidence of both GU and DU in males[5,8,9,14].

In Japan, it has been well known that GU is more common than DU[12,15]. However, recent report points that the prevalence of DU has increased and the preponderance pattern of GU has changed[10].

In this study, to examine the annual change of GU and DU, a total of 2548 peptic ulcers, which had been diagnosed endoscopically in Hiroshima University Hospital, were studied. From the results obtained by this study, the overall GU to DU ratio was 1.5 and the overall male to female ratio was 2.7 for GU and 3.4 for DU. GU was more common than DU, and both GU and DU were more common in males than in females, as well-known. However, conversely, in the patients less than 39 years old, DU was more common than GU. The male to female ratio of GU was surprisingly constant in all decades. On the other hand, that of DU varied between the different age groups, being the most marked male preponderance in the second decade. This male preponderance pattern resulted from the marked decrease of DU in females. Similarly in Western countries, there is the same decline of DU in young females[3,7]. The reason for this marked decrease in incidence of DU in young females is obscure, but some reports indicate that female sex hormone has the protective effect for peptic ulcer[1] or the reduction of acid secretion which is aggressive factor for peptic ulcer[2].

As to the annual changes, there was no marked change in the prevalence of GU during the period studied, while there was a small increase in that of DU from 1977. However, GU was more common than DU in all decades, and GU to DU ratio approximately contrast before and after 1977. On the other hand, there was the annual decline in the male to female ratio of GU and DU during the recent 10 years. This decline resulted from a small decrease in males and a small increase in females. Recent reports from Western countries have shown the same decline in the male to female ratio[5,8,9,13].

The reasons for this decline are obscure, except for the several suggestions that it is likely to reflect the impact of environmental factors[9,11,13], such as cigarette smoking, drug, diet and life-stress. For example, in United States cigarette smoking has decreased sharply for male and increased only slightly for female during the past 20 years[4]. In Japan, it is not clear whether the same phenomenon happens or not. However, it is important that these annual changes are studied from the stand point of the epidemiolgy, to clarify the pathogenesis of peptic ulcer from the environmental factors.

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