Incidence, Types and Complications of Chronic Gastric Ulcer (A Change in the Indications of Surgery)

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ABSTRACT:

BACKGROUND:

Peptic ulcers are defects in the gastrointestinal mucosa that extend through the muscularis mucosae. They persist as a function of the acid or peptic activity in gastric juice. The natural history of peptic ulcer ranges from resolution without intervention to the development of complications with the potential for significant morbidity and mortality, such as bleeding and perforation.

OBJECTIVE:

Reviewing the incidence, types, complications and surgical indications for chronic gastric ulcer in Iraq and comparing it with other world reports.

METHODS:

Retrospective study of the data base for 5166 patients with chronic peptic ulcer disease operated upon between 1965-2000. The incidence of chronic gastric ulcer, their age, sex, race, clinical presentation, diagnosis, types, size of ulcers and the indications of surgery during the period 1965-1980 (Group A) and 1981-2000 (Group B) were reviewed.

RESULTS:

Among the 5166 patients with peptic ulcer disease,111(2.15%) had chronic gastric ulcer.86 (77.5%) were male and 25 (22.5%) were females. 97 (87%) were Arabs and 14 (12.6%) were Kurds, a ratio: 8.1/1. Age ranges (mean) 19-79 (53.9) years. Duration of illness ranges (mean) 6 months to 9 years (4.2 years). 68.5% of patients were among the low socioeconomic classes. 77.9% of males were smokers. Barium study showed the ulcer in the 89 patients examined. Malignancy was excluded by endoscopy and biopsy in 91 and frozen section biopsy during surgery in 49 patients. Types of ulcer were; Type I: 47 (42.3%), Type II: 44 (39.6%), Type III: 14 (12.6%) and Type IV 6 (5.4%) patients. The Size of ulcers was; < 2 cm 23 (20.7%), 2-4 cm 57 (51.4%) and > 4 cm 31 (27.9%) patients. Indications for surgery in Group A (67 patients) versus Group B (44 patients) were; dyspepsia 51 (67.1%) v 11 (25%), gastric outlet obstruction 9 (13.4%) v 18 (40.9%), bleeding 6 (9%) v 13 (29.5%) and perforation one (1.5%) v 2 (4.5%) patients. Surgical procedures were; vagotomy and drainage in 77 (69.4%) and B-I partial gastrectomy in 34 (30.6%) patients. 2 (1.8%) died post-operatively, 11 lost to follow after 6-9 months and 98 patients were followed for 5-32 years. Evidence of recurrent stomal ulcer in one patient.

CONCLUSION:

The incidence of chronic gastric ulcer in Iraq is low compared to chronic DU a ratio 1/45.5. Mean age 53.9 years. Male/female: 3.4/1 .Arabs/Kurds: 6.9/1 . Coexistence of chronic duodenal ulcer with chronic gastric ulcer was 39.6%. The indications for surgery during the period 1965-1980 versus the period 1981-2000 were; elective in 51 (76%) v 11 (25%) and urgent or emergency in 16 (24%) v 33 (75%) patients. Operations were; vagotomy and drainage in 69.4% and resection in 30.6% of patients.

KEY WORDS: peptic ulcer disease, chronic gastric ulcer, chronic duodenal ulcer,gastric ulcer, duodenal ulcer, helicobacter pylori

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INTRODUCTION:

The incidence of chronic gastric ulcer (CGU) vary from country to other, its incidence per1000 population were; one case in Japan, 1.5 cases in Norway and 2.7 cases in Scotland. [1] The incidence of chronic gastric ulcer (CGU) / chronic duodenal ulcer (CDU) vary from 1/4 to 1/20.[2] CGU occur when there is imbalance between the digestive power (acid & pepsin) and the defensive factors (mucous barrier).

Of the etiological factors, Helicobecter pylori is responsible for 70 % of CGU and 25-30% are caused by NSAIDs, others; socioeconomic, smoking, aspirin, steroids and gastric stasis.[2,3,4,5,6] 90 % of CGU are single and coexistence with CDU occurs in 10-15% of patients.[3] CGU affects the middle aged and elderly people and predominate in the males.[2,3]

The site of CGU occur at the junction between the body and antrum mucosa along the lesser curve usually around the incisura.[3,7] GU occur when there is acid and gastrin and never found in achlorhydric patient.[3]

CGU are four Types; Type I & IV are seen with hypoacidity , type I is the commonest and located at or near the incisura while Type IV is found high up on lesser curve near the cardia, Type II & III are found with hyperacidity, Type II is located in the body and associated with gastric stasis secondary to CDU while Type III is prepyloric and occur at the junction of the antrum and duodenal mucosa.[2,4,7]

The advantage of this classification is to choose the suitable surgical procedure for each type, as in most of these types conservative rather than resection can be safely applied.[8,9]

The dramatic improvement in the medical treatment of peptic ulcer disease(PUD) in the 1980s following the introduction of the new drugs and when the etiopathogenic role of Helicobacter pylori was realized, led to the replacement of surgery by medical treatment in most elective cases. [10,11,12,13,14] But the increase incidence of perforation and bleeding in PUD especially in the elderly in the 1990s resulted in rise of hospitalization and emergency operations. [15,16,17] All these events have changed greatly the elective indications of surgery for PUD. [15,18]

MATERIALS AND METHODS:

The medical records of 5166 patients with chronic PUD operated upon by the senior author during the period 1965-2000 at the Medical City Teaching Hospital and Almustansiria private hospital, Baghdad, were reviewed. The incidence of CGU among these patients and their; age, sex, race, clinical presentations, diagnosis, type and size of ulcers and the indications of surgery during the period 1965-1980 (Group A) and 1981-2000 (Group B) were studied and compared.

RESULT:

Among the 5166 patients with chronic PUD there were, 4891 (94.7%) CDU, 164 (3.2%) stomal ulcer and 111(2.1%) CGU. Of those 111; 86 (77.5%) were males and 25 (22.5%) were females, a ratio of M/F: 3.44/1. 97 (87%) were Arabs and 14 (12.6%) were Kurds, a ratio of A/K: 6.9/1 (normal population ratio of A/K: 5/1).Age ranges (mean) from 19-79 (53.9) years, a peak at 50-59 and 66 (59.5%) patients were 50 years or more (figure 1). The duration of illness ranges (mean) from 6 months-9 years (4.2 yrs). 76 (68.5%) patients were among the low socioeconomic classes (Table1). Of 86 males, 67 (77.9%) were smokers and 19 (22.1%) non-smokers.

Diagnosis of GU was confirmed by barium study for the 89 (80%) and gastroscopy for the 91 (82%) patients examined. Malignant change was excluded by endoscopic multiple biopsies preoperatively in 91, frozen section biopsy during surgery in 49 and histopathology of resected surgical specimens (gastric or ulcer resection) of 51 patients.

Types of GU were; Type I: 47 (42.3%), Type II: 44 (39.6%), Type III: 14 (12.6%) and Type IV: 6 (5.4%) patients (Table 3) The distribution of these 111 chronic gastric ulcer in the stomach is shown in Figure 2. The size of the ulcers were; < 2 cm 23 (20.7%), 2-4 cm 57 (51.4%) and > 4 cm 31 (27.9%) patients. Barium meals of type I, II and IV are shown in Figures 3,4 and 5.

Surgical indications were elective in 62 (55.9%) for ulcer dyspepsia and urgent or emergency for complications of GU in 49 (44.1%) patients .Of these 49 patients; 27 (24.3%) for gastric outlet obstruction, 19 (17.1%) for acute massive bleeding (11 emergency and 8 early elective) and 3 (2.7%) for perforation.

The indications for surgery in Group A (67 patients) versus Group B (44patients) were;

dyspepsia 51 (67.1%) v 11 (25%), gastric outlet obstruction 9 (13.4%) v 17 (38.6%), bleeding 6 (9%) v 13 (29.5%) and perforation one (1.5%) v 2 (4.5%) patients.

Surgical procedures were; in 77 (69.4%) vagotomy and drainage (31 retrocolic gastrojejunostomy, 29 Finney's and 17 Jaboly's pyloroplasty) and in 34 (30.6%) patients B-I partial gastrectomy. Two (1.8%) patients died post-operatively, one after vagotomy & drainage for pyloric stenosis and one after partial gastrectomy for massive bleeding.11 lost to follow after 6-9 months and 98 patients were followed for 5-32 years.Two patients with combined CDU & CGU who had vagotomy and drainage develop recurrent ulcer after 2 and 3.5 years.

DISCUSSION:

Epidemiological studies show that a marked decrease in the rate of DU occurred, while the rate of GU remained stable. [19] People with low socioeconomic status are more likely to acquire H-pylori infection and are three times more likely to develop GU compared with non infected. [2,3,4,19] The incidence of GU increases with age because of combination of increase NSAID use and a high prevalence of H-pylori infection in persons older than 50 years. [15,19,20] A finding noticed in our series. Cigarette smoking can affect gastric mucosal defence and play a facultative role in H-pylori infection, smokers tend to develop more frequent and recurrent ulcers and are more resistant to therapy. [5,6,19] Prevalence of CGU among smokers is confirmed in present study.The incidence of GU in our study is less frequent than CDU in a proportion of 1/45.5 while in other reports was 1/4 -1/20. [2] Age incidence in this study showed that 59.5% of patients were 50 years and above, a finding similar to most reports. [2,3,14,15] The ratio of males/females in our review is 3.4/1 while in USA 1/1, in Finland 3.7/1 and in India 18/1. [2,14,19]

The high incidence (68.5%) of GU among the lower socioeconomic classes reported in this study is in line with other reports. [2,4,19] This is attributed to the high incidence of H-pylori in these people particularly in developed countries including Iraq.

The incidence of malignant change is rare and reported about 2%. [7] In this study it was ruled out pre-operatively by multiple endoscopic biopsies, by frozen section biopsy during operation in suspected cases and histopathology of resected surgical specimens.

The introduction recently of EUS-Biopsy in Iraq, a highly accurate diagnostic procedure, will limit the need for frozen section biopsy in future.

In our review, CGU were grouped into four types following other world authors. [2,4,7]

The commonest is Type I solitary ulcer around the incisura of the lesser curve was found in 42.3% of patients similar to others reports, while the incidence of Type II coexistence of CGU and CDU was 39.6% of patients, which is much higher than 10-15% in other reports. [3] This is due to the prevalence of CDU among the Iraqi people whoare exposed to stress of wars (1979-1988 and 1990-1991) and sanction (1991-2003) which had led to the deterioration of the infra structure of Iraq and lowering the standard of hygiene, living, economy, social life and provoked smoking. All these factors caused prevalence of H-pylori and PUD.

With the improvement of diagnostic tools and endoscopic therapy (E-T) procedures, the dramatic achievement of the new medication and realizing the etiological role of H-pylori in the 1980s, the role of surgery in treatment of PUD had changed in the past twenty years. The primary elective treatment of PUD is medical therapy while surgery is needed mainly as an emergency procedure for complications such as; perforations, massive bleeding uncontrolled or inaccessible for E-T, gastric outlet obstruction not yield to endoscopic dilatation and malignancy cannot be ruled out. [12,13,14,15,16,18]

The incidence of emergency operations for complications of PUD has not changed or increased as a result of rising incidence of perforation and bleeding in elderly people. [14,15,19,20,21,22]. These findings were observed in our review. The most important aim in the management of these complications is to lower the mortality which remained at 10-20% for bleeding and for perforation approximately 12% of patients, especially in the elderly, as 95% of ulcer death occur in patients over 55 years. [18,21,22,23] The treatment of bleeding PUD is still controversial in high-risk patients with arterial bleeding or a visible vessel, the mortality of patients treated conservatively versus patients treated by early elective surgery was 14 versus 7% while in patients aged 70 or more was 31 versus 16%. [24] Most authors agree that the first line of treating acute bleeding PUD is E-T. [19,20,24,25,26] Opinions differ about the next step when the bleeding stopped, recur or continued after E-T. If the bleeding was controlled, some authors advice early elective surgery for patients having ulcers with high risk of bleeding and in elderly age while others advice medical therapy. In case the bleeding recur, some

advice a second trial of E-T others advice emergency surgery, but when the bleeding continued after two trials of E-T, emergency operation becomes imperative. [25,26,27,28,29,30]

In this review, patients with acute massive bleeding from CGU, conservative medical therapy was given a trial first and if the bleeding stopped, early elective surgery was done, for patients with high-risk bleeding ulcer, giant ulcer or elderly while if the hemorrhage continued for more than 48 hours and the patient need more than 4 units blood every 24 hours to maintain his vital signs or recur after it stopped, emergency surgery is carried out. Early surgery is much better compared to last minute surgery. [23]

Surgical procedures for bleeding CGU are either gastrectomy including the ulcer or vagotomy and drainage with suture or excision of the ulcer. [8,19,22,26,28,30] For perforated GU conservative treatment trial can be given in selected cases but simple closure by laparotomy is preferable than laparoscopic surgery, while in some cases resection is necessary. [25,28,29] In our cases one had resection and other two simple closure. For gastric outlet obstruction some advice endoscopic balloon dilatation with a success in 70% others advice by-pass or gastrectomy to prevent restenosis. [8,19,29] In our cases with gastric outlet obstruction either B-I gastrectomy or by-pass was done.

CONCLUSION:

The incidence of CGU in Iraq is very low compared to other parts of the world while CDU is prevalent. The ratio of CGU/CDU was 1/45.5. Mean age 53.9 years. Coexistence of CDU with CGU was found in 39.6% of patients. The indications for surgery for CGU during the period 1965-1980 were; for dyspepsia in 51(76%) and for complications in 16(24%) while between 1981-2000 were; for dyspepsia in 11(25%) and for complications in 33(75%) patients. For patients relapsing, not responding to medical therapy or malignancy cannot be ruled out, elective surgery was done. For bleeding, suture ligation or excision of the ulcer with vagotomy and drainage or B-I gastrectomy including the ulcer, for perforation simple suture-closure or resection while for gastric outlet obstruction either by-pass and vagotomy or B-I gastrectomy. The over all mortality was 1.8%.

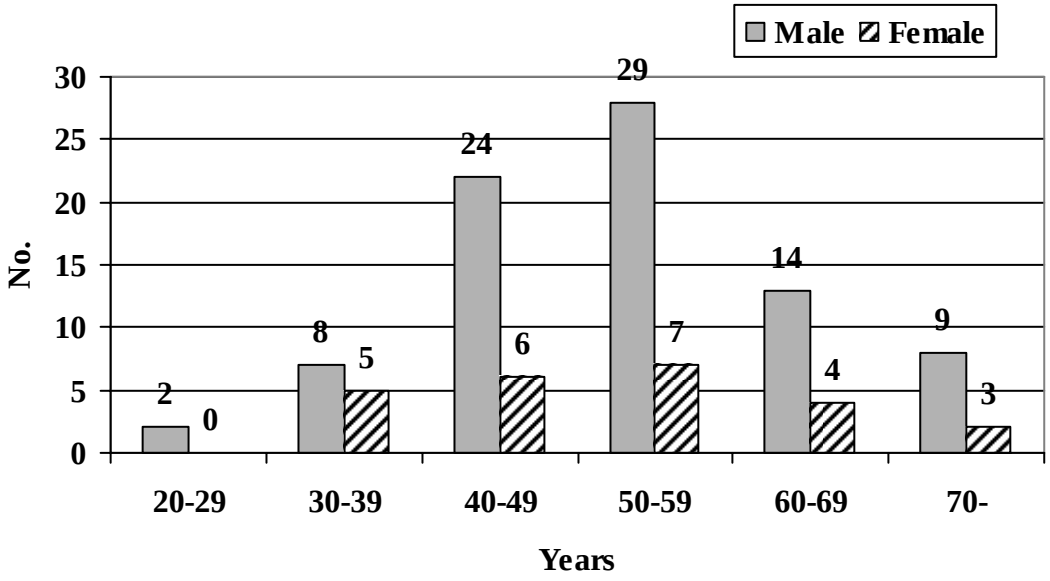

Figure 1: Age and sex distribution of G.U. (65-2000)

Table1: Clinical presentations in Chronic Gastric Ulcers

presentation	Numbers			Percent
	65-80	81-2000	total	%
Dyspepsia	51	11	62	55.9
Gastric outlet obstruction	9	18	27	24.3
Bleeding	6	13	19	17.1
perforation	1	2	3	2.7
Total	67	44	111	100

Table 2: Socioeconomic classes in Chronic Gastric Ulcers

	Classes*				Total
	I	II	III	IV	
Numbers	5	30	35	41	111
Percent %	4.5	27.0	31.5	36.9	100

*I Legislators, senior officials, managers, professionals, merchants, directors etc.
II High-level clerks, assistant professionals, teachers, shopkeepers, business etc.
III Low-level clerks, skilled non manual & manual occupations (electricians, builders, drivers etc).
IV Unskilled occupations (agriculture, laborers, servants, porters, cleaners, sale, domestic etc).

Table 3: Types of Chronic Gastric Ulcers.

	Types*				total
	I	II	III	IV	
numbers	47	44	14	6	111
Percent %	42.3	39.6	12.6	5.4	100

*I Lesser curve ulcer at or near the incisura occur with hypoacidity.
II GU in the body with gastric stasis secondary to CDU and hyperacidity.
III pre-pyloric GU found with hyperacidity.
IV GU high on lesser curve near the cardia found with hypoacidity.

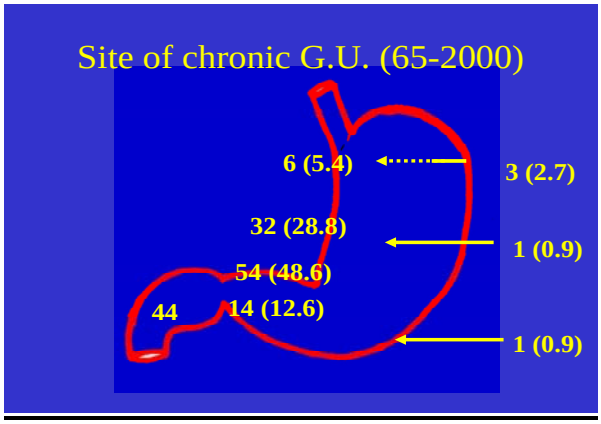

Figure 2: Showing the distribution of 111 CGU in the stomach;92 (82.9%) along the lesser curve, 14 (12.6%) in antrum,3(2.7%)on posterior wall, one (0.9%) on anterior wall and one (0.9%) ongreater curve. 44 (39.6%) of these associated with CDU.

Figure 3: Large lesser curve ulcer close to the incisura (type I).

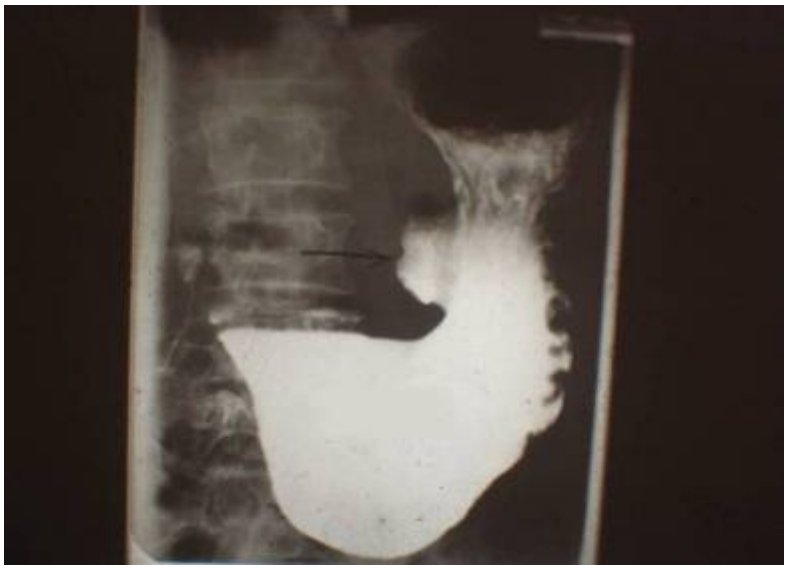

Figure 4: Giant chronic gastric ulcer secondary to gastric stasis resulted from stenosis of the duodenum by chronic duodenal ulcer (type II).

Figure 5: Showing gaint chronic gastric ulcer high up on the lesser curve (type IV).

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