

PEPTIC ULCER AMONG RURAL POPULATION IN A SELECTED REGION OF SOUTH-EASTERN POLAND

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Schabowski J, Pitera J: Peptic ulcer among rural population in a selected region of south-eastern Poland. *Ann Agric Environ Med* 2004, **11**, 323–327.

Abstract: Environmental conditioning of peptic ulcer, territorial variations in the occurrence of this disease, as well as reports indicating changes in the natural history of peptic ulcer provided incentives to undertake the present study. The aim of the study was to determine whether the above-mentioned changes in the course of peptic ulcer also concerned rural population from the agricultural region of south-eastern Poland. The study covered 1,647 patients with peptic ulcer treated in the General Surgery Ward at the Specialist Hospital in Brzozów (Rzeszów Region) between 1980-1999. The analysis was conducted based on data obtained from the documentation of the General Surgery Ward. In order to determine changes in the parameters examined taking place during the 20 year period, it was divided into 4 sub-periods of 5 years each. The total number of patients treated due for peptic ulcer was 1,647, including 470 patients with gastric ulcer (28.5%), 1,137 patients with duodenal ulcer (69.0%) and 40 with gastric and duodenal ulcer (2.5%). A decrease was noted in the number of patients treated for peptic ulcer during Period I of observation (1980-1984) and Period IV (1995-1999) - from 460 down to 348 patients $p < 0.0001$. Peptic ulcer more often affected males than females (70.2% and 29.8% respectively), most frequently in the age groups 41-50 (20.9%) and 51-60 (20.0%). Gastric ulcer was most often noted in the age groups 51-60 (24.4%) and 61-70 (23.8%), whereas duodenal ulcer in the age groups 42-50 (22.4%) and 31-40 (20.6%). During the study period (1980-1999), a decrease was observed in the number of patients treated for peptic ulcer. Hospitalization due to peptic ulcer decreased, mainly in patients with duodenal ulcer, and to a smaller degree among those with gastric ulcer. The relationship was observed between the incidence of peptic ulcer and the site of ulcer, sex and age of patients. Changes observed in hospitalization due to peptic ulcer among rural population in the south-eastern region of Poland was similar to those observed in other regions of Poland and the majority of European countries.

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Key words: gastric ulcer, duodenal ulcer, sex, age, hospitalization, epidemiology.

INTRODUCTION

Peptic ulcer is one of the most frequent diseases of the alimentary tract. In various countries its prevalence is estimated as 5-10% of the adult population [2, 9, 14]. Despite reports indicating a decrease in the incidence of peptic ulcer, especially in the countries highly developed

economically, this disease still remains one of the most important problems, both in the practice of primary health care physicians and gastroenterologists [2, 5, 14, 15].

In the USA, peptic ulcer affects 10-11% of males and 7-8% of females [9]. The situation is similar in Norway where 10.5% of males and 9.5% of females are affected [2].

The studies conducted in the area of southern Poland estimated the occurrence of peptic ulcer to be 6.2% [6]. Among workers of the Automobile Factory in Lublin peptic ulcer was diagnosed in 2.5% of the people examined, while among the rural population this disease occurred in 5.3% of the people examined aged 20-60 [14, 15].

The observations performed in Poland indicated that males suffer from peptic ulcer more than twice as often than females [6, 13, 14]. In Germany, similar to Poland, peptic ulcer more frequently affected males than females, whereas in the USA, Denmark and Norway the differences noted were not so large [1, 2, 9, 21].

In the majority of the countries in the world duodenal ulcer occurs considerably more frequently than gastric ulcer [3, 14, 21]. In Norway, gastric ulcer is diagnosed as often as duodenal ulcer [7], while in Japan gastric ulcer was observed more frequently than duodenal ulcer [22].

Until the 1970s, in the countries with highly developed market economy an increase was noted in the morbidity rates due to peptic ulcer; however, in the subsequent years a decrease in this morbidity was mentioned. A downward tendency was also observed with respect to the consequences of peptic ulcer, such as: peptic ulcer complications, hospital treatment, surgical treatment, sickness absenteeism, invalidity [3, 4, 22, 23].

The introduction in 1976 of the H₂ histamine receptor blockers for the treatment of peptic ulcer improved the effectiveness of the treatment of this disease [10]. The application of the proton pump at the beginning of the 1980s and then the introduction of standards for peptic ulcer treatment of *Helicobacter pylori* eradication contributed to further and still greater improvement in the efficiency of peptic ulcer conservative treatment [16, 21]. Consequently, the need for hospitalization of patients with peptic ulcer decreased, as well as the necessity for surgical treatment, sickness absenteeism and invalidity. Since the beginning of the 1980s, conservative treatment has been dominant in the treatment of gastric ulcer, and surgical procedures limited practically only to complications of the ulcer, although not all of them, for example, a large number of haemorrhages from the alimentary tract are treated by endoscopy [11, 12, 23].

Environmental conditioning of peptic ulcer, territorial variations in the occurrence of this disease and its complications, as well as reports indicating changes in the natural history of peptic ulcer, provided incentives to undertake the present studies [5, 9, 16-19]. The aim of the study was to determine whether the above-mentioned changes in the course of peptic ulcer also concerned rural population from the agricultural region in the south-eastern part of Poland (Brzozów Province, Rzeszów Region).

MATERIAL AND METHODS

The study covered 1,647 patients with peptic ulcer (1,156 men and 491 women) selected from 37,893 patients treated during 1980-1999 in the General Surgery Ward at the Specialist Hospital in Brzozów.

The patients came from the region covered with care by this hospital, which included the small town of Brzozów and 6 rural communities. This region overlaps with the territory of the present Brzozów Province and did not change during the period covered by the study. Population data for the study was obtained from the Local Administration Office in Brzozów. The majority of the population in the region covered with care by the hospital in Brzozów are rural inhabitants who constitute 88.7% of the total number of population (56,024), with only 11.3% being urban population (7,116). Hence, the observation carried out provides an image of changes which took place in the occurrence of peptic ulcer complications among rural population living in the south-eastern region of Poland.

Almost all patients from the area of Brzozów Province who required hospitalization due to peptic ulcer were admitted to the General Surgery Ward, which was associated with specific conditioning of work of this hospital in this special area. Only about 5% of peptic ulcer patients were treated in the Ward for Internal Diseases.

Analysis of the material was conducted based on the data obtained from the documentation of the General Surgery Ward: medical records, ward registers, registers of surgical procedures. A questionnaire form was designed for the purpose of the study which contained data concerning patients according to the following scheme: age, gender, place of residence, site of ulcer, type of peptic ulcer complication, method of treatment, surgical procedure, result of treatment. In order to determine changes in the parameters examined during the observation, the 20-year period in the study was divided into 4 sub-periods: Period I - 1980-1984; Period II - 1985-1989; Period III - 1990-1994; and Period IV - 1995-1999.

The material collected was subject to statistical analysis by means of SPSS PC Statistical Package, and the correlation between the variables examined was tested by means of the χ^2 test. In the case when the calculated χ^2 value exceeded the value read-out from the tables for the adopted level of significance ($p = 0.05$), the hypothesis about correlation was rejected.

Table 1. Complication of patients with peptic ulcer and those with other diseases who received treatment in the General Surgery Ward in Brzozów in 5-year periods of the study.

Study period	Patients with peptic ulcer		Patients with other diseases		Patients treated in the ward in general	
	n	%	n	%	n	%
I 1980-1984	460	5.4	8,1085	94.6	8,545	100
II 1985-1989	469	4.4	10,009	95.6	10,478	100
III 1990-1994	370	3.8	9,275	96.2	9,645	100
IV 1995-1999	348	3.7	8,877	96.3	9,225	100
Total 1980-1999	1,647	4.3	36,246	95.7	37,893	100

$\chi^2 = 35.87$; $df = 3$; $p < 0.0001$

Table 2. Compilation of patients with peptic ulcer according to site of ulcer and sex.

Site of ulcer		Males	Females	In general
Gastric ulcer	% _w	64.6	35.4	100.0
	n	304	166	470
	% _k	26.3	33.8	28.5
Duodenal ulcer	% _w	73.0	27.0	100.0
	n	830	307	1137
	% _k	71.8	62.5	69.0
Gastric and duodenal ulcer	% _w	55.0	45.0	100.0
	n	22	18	40
	% _k	1.9	3.7	2.5
Total	% _w	70.2	29.8	100.0
	n	1156	491	1647
	% _k	100.0	100.0	100.0

%_w – percentage of males and females in groups of individual sites of ulcer; %_k – percentage of individual sites of ulcer in the groups of males and females; $\chi^2 = 15.52$; $df = 2$; $p < 0.001$

RESULTS

During 1980-1999, 37,893 patients were treated in the General Surgery Ward at the hospital in Brzozów, including 1,647 patients with peptic ulcer, which constituted 4.34% of the total number of those treated in the ward. Gastric ulcer was diagnosed in 470 (28.5%) patients, duodenal ulcer in 1,137 (69.0%) patients, gastric and duodenal ulcer in 40 (2.5%) patients.

Table 1 presents the compilation of patients with peptic ulcer and those with other diseases who received treatment in the General Surgery Ward in Brzozów in 5-year periods of the study.

Between Periods I-IV of the study, a decrease was observed in the number of patients with peptic ulcer treated in the general Surgery ward ($p < 0.0001$). In Period I of the study, 460 patients with peptic ulcer were hospitalized, which constituted 5.4% of the total number of patients treated in the General Surgery Ward, while in Period IV - 348 patients (3.7%).

Table 2 presents a compilation of patients with peptic ulcer according to the site of the ulcer and sex.

Among patients with peptic ulcer there were 1,156 males (70.2%) and 491 females (29.8%). In the group of 470 patients with gastric ulcer males constituted 64.6% (304 patients), while females - 35.4% (166). Among 1,137 patients with duodenal ulcer there were 830 males (73.0%) and 307 females (27.0%), whereas in the group of 40 patients with gastric and duodenal ulcer there were 22 males (55.0%) and 18 females (45.0%). The ratio of males to females among patients with peptic ulcer was 2.35:1, with gastric ulcer 1.83:1, with duodenal ulcer 2.71:1, and with gastric and duodenal ulcer 1.22:1.

In the group of males with peptic ulcer, gastric ulcer was diagnosed in 304 patients (26.3%), duodenal ulcer in 830 (71.8%), and gastric and duodenal ulcer in 22 (1.9%). Among females, gastric ulcer was diagnosed in 166 patients (35.4%), duodenal ulcer in 307 (62.5%) and gastric and duodenal ulcer in 18 (3.7%).

Table 3. Compilation of patients with peptic ulcer in 10-year age intervals with consideration of the site of ulcer.

Site of ulcer		Age intervals (year)							Total
		<31	31-40	41-50	51-60	61-70	71-80	>80	
Gastric ulcer	n	31	54	79	115	112	62	17	470
	%	6.6	11.8	16.7	24.4	23.8	13.1	3.6	100
Duodenal ulcer	n	216	235	254	207	124	84	17	1,137
	%	19.0	20.6	22.4	18.2	10.9	7.4	1.5	100
Duodenal and gastric ulcer	n	3	5	11	7	7	5	2	40
	%	7.5	12.5	27.5	17.5	17.5	12.5	5.0	100
Total	n	250	294	344	329	243	151	36	1,647
	%	15.2	17.8	20.9	20.0	14.7	9.2	2.2	100

$\chi^2 > 99$; $df = 12$; $p < 0.0001$;

The differences in the site of ulcer observed between the groups of males and females were statistically significant ($p < 0.001$).

Table 3 presents a compilation of patients with peptic ulcer at 10-year age intervals with consideration of the site of ulcer. The data presented show that peptic ulcer more often affected patients aged 41-50 (20.9%) and 51-60 (20.0%). Among patients with gastric ulcer the greatest number of patients were aged 51-60 (24.4%) and 61-70 (23.8%), while the smallest group were those aged over 80 (3.6%) and under 31 (6.6%). Among patients with duodenal ulcer the greatest number of patients were aged 41-50 (22.4%) and 31-40 (20.6%), whereas the number of patients aged over 80 and 71-80 was the smallest (1.5% and 7.4% respectively).

The results of the study showed a correlation between the incidence of peptic ulcer and age of patients, which was highly significant statistically ($p < 0.0001$). The mean age of patients with gastric ulcer was 55, while the mean age of patients with duodenal ulcer was 45. The youngest patient who had undergone surgical procedure due to peptic ulcer was 18 (perforation of the ulcer), whereas the oldest patient was aged 94 (bleeding from the ulcer).

DISCUSSION

Literature reports show a great variation in the frequency of hospitalization due to peptic ulcer. Many authors mention that until the implementation of treatment with H₂ histamine receptor blockers, and then inhibitors of the proton pump and *Helicobacter pylori* eradication, the general number of patients hospitalized due to peptic ulcer considerably decreased, whereas the number of admissions to hospital due to peptic ulcer complications decreased to a minimum degree [10, 16, 21, 23].

During the period of the study (1980-1999) in the General Surgery Ward in Brzozów a decrease was observed in the number of patients treated due to peptic

ulcer - from 460 patients (5.3% of the total number of patients treated) in Period I of the study to 348 (3.7%) in Period IV ($p < 0.0001$).

European and American studies of the 1980s and 1990s confirmed a decrease in the incidence of peptic ulcer and the number of patients receiving hospital treatment due to this disease [4, 10, 21]. Andersen *et al.* [1] reported that in 1993 among Danish population aged over 15 the hospitalization rate due to gastric ulcer was 739/million inhabitants/year, while due to duodenal ulcer - 619/million/year. During the 1981-1993, a decrease in the hospitalization rate due to peptic ulcer was observed among males from 14.0-11.0/10,000/year, and a slight increase in this rate among females from 10.5-11.3/10,000/year. In 1998, Everhart *et al.* [6] reported the incidence of peptic ulcer in the USA to be 5.27/10,000 adult inhabitants, based on the analysis of data from the National Centre for Health. The study published in 1998 by El-Serag *et al.* [5], developed based on the analysis of hospitalization of war veterans due to peptic ulcer in the USA during 1970-1974 and 1990-1995, indicated a decrease in hospitalization rates due to gastric ulcer from 67-49 patients/10,000/year, and due to duodenal ulcer from 168-52 patients/10,000/year. In the Clinic for Surgery at the Medical University in Łódź, the number of patients treated for peptic ulcer decreased from 786 in the years 1977-1983 to 279 during the period 1987-1993 [11].

In the present study, duodenal ulcer was diagnosed in 69.0% patients, gastric ulcer in 28.5%, duodenal and gastric ulcer in 2.5% of patients with peptic ulcer. Duodenal ulcer occurred 2.4 times more frequently than gastric ulcer, and 28 times more often than gastric and duodenal ulcer.

A report concerning the occurrence of peptic ulcer among employees of industrial plants in Lublin and Puławy in 1989-1990, Schabowski [15], mentioned that duodenal ulcer was diagnosed 5.6 times more often than gastric ulcer, and 11 times more frequently than gastric and duodenal ulcer. The study conducted in 1990 among Polish rural population showed that duodenal ulcer occurred 2.7 times more often than gastric ulcer (59.8% of patients and 22.1% of patients respectively), and 13 times more frequently than gastric and duodenal ulcer (4.6% of patients); the remaining 13.5% were patients who had undergone surgical procedure due to peptic ulcer [14]. In Japan, gastric ulcer was also more frequently diagnosed than duodenal ulcer [22], whereas in Sweden gastric ulcer occurred as often as duodenal ulcer [7].

Among patients with peptic ulcer treated in the General Surgery Ward in Brzozów during 1980-1999, males constituted 70.2% and females 29.8% of patients, in the group of patients with gastric ulcer - 64.6% and 35.4% respectively, with duodenal ulcer - 73.0% and 27.0% respectively, with gastric and duodenal ulcer - 55.0% and 45.0% respectively. The results obtained indicated that males were hospitalized due to peptic ulcer 2.4 times more often than females ($p < 0.001$).

The study conducted by Rużyło *et al.* [13], which covered 8 regions and Warsaw and concerned the natural history of peptic ulcer, showed that this disease was diagnosed twice as frequently among males than females. The study by Andersen *et al.* [1], which covered patients hospitalized due to peptic ulcer in Denmark, showed that peptic ulcer occurred equally frequently among males and females (M:F = 0.96 :1). The report by Schabowski [14] concerning alimentary tract diseases among rural population in Poland in 1990, confirmed that gastric ulcer was diagnosed 2.1 more often among males than females, while duodenal ulcer occurred 2.7 times more frequently.

The results of the study showed statistically significant differences in the frequency of hospitalization of patients with peptic ulcer according to age, irrespective of the site of ulcer ($p < 0.0001$). The greatest number of patients with peptic ulcer were those aged 41-50 (20.9%) and 51-60 (20.0%). Among patients with gastric ulcer, the greatest number were those aged 51-60 (24.4%) and 61-70 (23.8%), whereas among patients with duodenal ulcer - those aged 41-50 (22.4%) and 31-40 (20.6%).

In the studies concerning the prevalence of peptic ulcer a relationship was noted between peptic ulcer and age of patients. The reports emphasize a decrease in morbidity rates due to peptic ulcer among young people and the fact that high rates are maintained among the elderly, especially females [5, 8, 12]. The probable cause of these changes is an increased administration of non-steroid anti-inflammatory drugs (NSAIDs) to people at older age. These drugs seem to be the primary factor responsible for high hospitalization rates due to peptic ulcer, as well as the high frequency of complications such as bleeding and perforation of the ulcer [5, 8, 21].

CONCLUSIONS

The observations carried out enabled the following conclusions to be drawn:

1. During the period analysed (1980-1999), among the rural population in the south-eastern region of Poland, a decrease was noted in the number of patients requiring hospital treatment due to peptic ulcer.
2. Peptic ulcer occurred 2.4 times more frequently among males than females, and duodenal ulcer was noted 2.3 times more than gastric ulcer.
3. Relationship was observed between the incidence of peptic ulcer and the site of ulcer, sex and age of patients.
4. Changes observed in hospitalization due to peptic ulcer among rural population in the south-eastern region of Poland were similar to those observed in other regions of Poland and the majority of the European countries.

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