

## Risk factor for perforated duodenal ulcer in sulaemania city

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### ABSTRACT

**Background and Objective:** This prospective study was to evaluate the probable risk factors for perforation of duodenal ulcer, highlighting any prevalent one in the occurrence of perforation in Sulaemania city. The study was designed to be performed on patients with perforated duodenal ulcer attending the emergency department in Sulaemania teaching hospital over the period of this study.

**Method:** This study was conducted between 1<sup>st</sup> of March 2009 till the 1<sup>st</sup> of October 2009 involving 50 patients with perforated duodenal ulcer attended the emergency department in Sulaemania teaching hospital. A number of probable risk factors for the patients were studied.

**Results:** Out of 50 patients, 41(82%) were males, 9(18%) were females and the male to female ratio was (4.5:1), about 32% of the patients were more than 60 years old. Patients described themselves as having a nervous personality were 31(62%) and the number of patients lived in city center were 28(56%). Smoker patients were 36(72%) and 33 patients (66%) had a history of NSAIDs ingestion.

**Conclusion:** Smoking, NSAIDs ingestion, sex, age and stress played a major role as risk factors in the occurrence in duodenal ulcer perforation. There is a seasonal variation in incidence of perforation including high incidence during spring and autumn.

**Key Words:** Perforated duodenal ulcer, Nonsteroidal antiinflammatory drugs, Smoking, *H. Pylori*, Proton pump inhibitors and antisecretory dugs.

### INTRODUCTION:

Acute perforation of duodenal ulcer is one of the real emergencies of surgery that require immediate attention and prompt operation<sup>1</sup>. Despite the wide spread use of gastric antisecretory agents and eradication therapy for *H. pylori*, the incidence of perforated duodenal ulcer remains more or less the same (5 -10%)<sup>2</sup>. The association of various probable risk factors such as smoking, alcohol, inadequate dietary intake, ABO blood group and non-steroidal anti-inflammatory drugs have been studied widely<sup>3</sup>. However, there has been a considerable change in the epidemiology of perforated duodenal ulcer over the last decade.

middle aged, but with time, due to awareness of *H. pylori* infection and increasing of NSAIDs usage, there has been a steady increase in the age of the patients suffering this complication. Prostaglandins (PG) control the blood supply to the mucosa, deficiency of PG lead to ischemia and if this is severe enough it may lead to perforation. NSAIDs ingestion reduces PG synthesis and lead to the development of perforation<sup>4</sup>. By far the most common site of perforation is the anterior ulcer<sup>4</sup>. The surgical intervention of simple closure of the perforation with or without an omental patch is the accepted procedure. The role of laparoscopic closure is gaining popularity since its initial reports in 1987<sup>5</sup>. Modern antiulcer therapy

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antihelicobacter agents has decreased the recurrence rate after simple closure of the perforation from 42% to 6 %<sup>6</sup>. The effect of stress, fasting and smoking in the establishment of duodenal ulcer and development of its perforation must not be ignored<sup>7</sup>.

#### **AIM OF THE STUDY**

The aim of this study was to evaluate the probable risk factors for perforation of duodenal ulcer, highlighting any prevalent one in the occurrence of perforation in Sulaemania city.

#### **PATEINT AND METHODS:**

In this prospective study, 50 patients admitted to the emergency department of Sulaemania teaching hospital were studied during the period from the 1<sup>st</sup> of March 2009 till the 1<sup>st</sup> of October 2009. The age, sex and residency were studied; we considered the residency of the patients who live in city center as "urban" and the suburbs as "rural". The patients were considered to be fasting if the last meal has been eaten in more than 4 hours. Regarding the type of personality, the patients have described themselves as "nervous" and "calm" and it was considered as an indicator for the patients stress condition. The risk factors studied included stress, fasting, family history of duodenal ulcer, ingestion of NSAIDs, alcohol, sex and age. The clinical presentation of the patients was studied with the investigations used to diagnose the case (erect chest x-ray and ultrasonography), then all the patients in this study were treated surgically using a simple closure with the

#### **RESULT:**

use of omental patch.

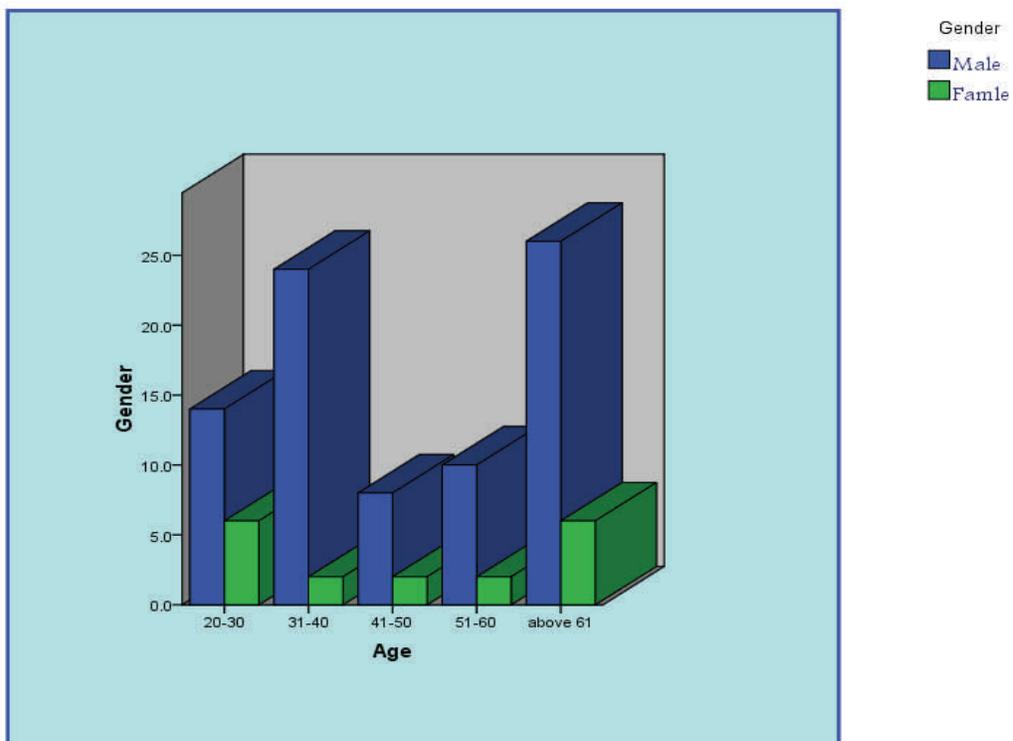
The mean age for the patients was 49.8 years and the range is (20 – 84). Perforated DU is more common in the age group above 61 years. During the study period, 50 patients proved to have a perforated duodenal ulcer. 41(82%) males and 9 (18%) females, the male to female ratio is (4.5:1). The age and gender

Twenty eight patients (56%) were from the city center "urban" and 22 (44%) were from the suburbs "rural" areas. The number of the patients who were symptomatic before the perforation was 14 (28%) most of them were on irregular treatment for the ulcer or dyspepsia and the remaining 36 (72%) were asymptomatic, i.e.: they had no previous history of dyspepsia or ulcer. There was two peaks of higher incidence during the period of our thesis happened in April and September months. Smokers were 36 patients (72%).

Table 2 shows the incidence of perforation according to the risk factors. Thirty three (66%) of the patients had a history of ingestion of NSAIDs within one week before perforation, the most common drug taken was diclofenac sodium (voltaren) in 33 (66%) cases either in the form of entral (70%) or injectable (30%), this is followed by mefenamic acid (15%), ibuprofen (10%) and other types (5%). There was a positive family history of duodenal ulcer in 8 (16%) of the patients, also 7 (14%) patients reported alcohol ingestion. Blood group O is the most common blood group associated with perforated duodenal ulcer. Table 3 shows the relationship with various blood groups.

**Table 1:** Age and gender distribution for 50 patients with perforated DU.

Gender	Age					Total
	20-30 year	31-40 year	41-50 year	51-60 year	above 61	
<b>Male N(%)</b>	7(17.1)	12(29.3)	4(9.8)	5(12.2)	13(31.7)	41(100.0)
<b>Female N(%)</b>	3(33.3)	1(11.1)	1(11.1)	1(11.1)	3(33.3)	9(100.0)
<b>Total N(%)</b>	10(20.0)	13(26.0)	5(10.0)	6(12.0)	16(32.0)	50(100.0)



**Figure 1:** Age and gender distribution for 50 patients with perforated D.U

**Table 2:** Incidence of perforation according to the risk factors

Variable	Frequency	Percent
<b>NSAIDS</b>		
Yes	33	66.0
No	17	34.0
<b>Smoking</b>		
Yes	36	72.0
No	14	28.0
<b>Alcohol</b>		
Yes	7	14.0
No	43	86.0
<b>Stress</b>		
Yes	31	62.0
No	19	38.0
<b>Family history</b>		
Yes	8	16.0
No	42	84.0
<b>Fasting</b>		
Yes	13	26.0
No	37	74.0

**Table 3:** Blood Groups associated with 50 cases of Perforated Duodenal Ulcer

Variable	Blood Group O	Blood Group B	Blood Group A	Blood Group AB	Total
Number	23	12	12	3	50
Percent	46.0	24.0	24.0	6.0	100.0

**DISCUSSION:**

Thirty three (66%) of our patients had history of ingestion of NSAIDs for different reasons which is similar to other studies which indicated that in spite of overall decline in the incidence of peptic ulcer disease, the incidence of perforated duodenal ulcer has not reduced. This may be due to the increased use of NSAIDs over the last twenty years<sup>8</sup>. Our results indicated that perforation of duodenal ulcer is more common in males than females in agreement with other studies<sup>9,10</sup>. This sex difference is attributed probably to the

social and smoking habits in this society as the male predominance is recently declining. In the western countries with the changing pattern of smoking and increased stress in working women<sup>11</sup>, the peak incidence age for ulcer prevalence is different among different studies, and in different population and time<sup>12</sup>. In our study, duodenal ulcer perforation occurred in higher incidence in the older age group (= or > 61 years) 31% as explained in table 1 and figure 1 and it was rare in the age group below 20 years. We think that an increase in the frequency of perforation in the old age group reflects that age is a

for ulcer perforation and this finding is comparable with other study<sup>(7)</sup>. This may be due to an increase of *H. pylori* infection in those over the age of 50 years and 70 years is >50% and 70% respectively or due to vascular devitalization<sup>8</sup>. Only 16% of our patients had a positive family history of duodenal ulcer, and this differs from other studies which showed that people who have a family history of duodenal ulcer are more likely to get them and the presence of first degree relative with duodenal ulcer will increase the risk of developing the ulcer and it's complications, this may be due to sharing the same psychological stress, food habits and the same genetic factors<sup>13</sup>. A strong association was found in this study between cigarette smoking and prevalence of duodenal ulcer perforation (smoking is known to have a number of adverse effects on mucosal aggressive and protection factors by many studies<sup>14</sup>. perforation in other months was (6.6) which means a higher incidence during this month, although the overall number of patients with a history of fasting was 13 (26%) and this result goes with other studies<sup>15</sup>.

During the period of this study there was an increased incidence in two months which were April and September, possibly due to the high rates of ingestion of NSAIDs in these periods due to minor illnesses such as flu. The relation of perforated duodenal ulcer with seasons was discussed in many studies but a frank association was not found<sup>16</sup>. The high incidence of duodenal ulcer perforation in patients under stress can not be ignored in our society and stress seems to be a strong risk factor for perforation because a large percentage of our patients (62%) had positive stressful environment. There was a little difference in this study, in terms of perforation, between rural and urban areas. This is probably due to the migration between the two communities which made the psychosocial factors that affect the development and the complication of duodenal ulcer such as the feeding habits and smoking to be almost

showed that the higher percentage of blood groups associated with perforated duodenal ulcer was blood group (O) and this may be due to higher percentage of blood group O in the population (46%)<sup>18</sup>.

## CONCLUSION

Old age, male sex, smoking, stress and NSAID ingestion played role in the incidence of duodenal ulcer perforation.

## RECOMENDATION

We will recommend adding further clinical assessment and laboratory investigations for early detection and treatment of the disease, such as liberal use of OGD and *H. Pylori* detection methods. Using NSAIDs should be with precaution with the usage of antisecretory drugs with them if indicated.

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