

## ATTRIBUTES OF PATIENTS WITH PERFORATED DUODENAL ULCER IN DUHOK CITY

MOWAFAK M. BAHADDIN, MBChB, CABS, FRCS\*  
FERHAD MOHAMMED RASHEED AHMED, MBChB, FKBMS\*\*

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### ABSTRACT

**Background:** Perforation of peptic ulcer is regarded as one of the common abdominal surgical emergencies. The objective of this study was to describe the clinical features and potential risk factors among patients with perforated duodenal ulcer in Duhok city.

**Subject and Methods:** This is a prospective descriptive study done at the Emergency Teaching Hospital in Duhok city, over a period of one year (1st of January, 2015- 31st of December, 2015). The study included 35 patients who were operated upon for perforated duodenal ulcer. The clinical findings and probable risk factors for perforation of the duodenal ulcer were studied.

**Results:** Age of the patients ranged from 15-80 years; the commonest age group affected was the 20-39 years old (54.2%). Twenty-eight (80%) were males. *Helicobacter pylori* antibodies were positive of in 26 patients (74.2 %) while history of ingestion of non-steroidal anti-inflammatory drugs in 25 (71.4%). Twenty-one patients (60%) were smokers and 10 (28.5%) alcoholic. Past history of chronic peptic ulcer was present in 12 patients (34.2%), positive family history in 4 (11.4) and history of ingestion of steroid in 2 (5.7%). Duration of symptoms for more than 24 hours was present in 20 patients (57.1%), generalized abdominal pain in 19 (54.2%), epigastric pain in 16 (45.7%), nausea in 18 (51.4%), vomiting in 12 (34.2%) and rigid abdomen in 26 (74.2%).

**Conclusions:** Young age, male gender *Helicobacter pylori* infection, ingestion of non-steroidal anti-inflammatory drugs and smoking, seemed probable risk factors for occurrence of duodenal ulcer perforation. Late presentation was not uncommon.

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**Keywords:** Duodenal ulcer perforation, Clinical features, Risk factors.

Peptic ulcer is considered as a worldwide health burden; 4 million people are affected with peptic ulcer around the world every year<sup>1, 2</sup>. There are two types of chronic peptic ulcers, gastric and duodenal ulcer; duodenal ulcer (DU) is four fold more common compared to gastric ulcer<sup>3</sup>. The introduction of

histamine 2 receptor antagonist in 1976 as significantly reduced the elective surgery carried out with the cases of duodenal ulcer<sup>4</sup>. The most common complications associated with peptic ulcer are bleeding, perforation and obstruction<sup>5</sup>, while perforation is the second most frequent complication that comes after bleeding, yet

\* Assist. Professor, Lecturer, Department of Surgery, College of Medicine, University of Duhok, Kurdistan Region, Iraq

\*\* Specialist Surgeon (General Surgery), Azadi Teaching Hospital, Duhok, Kurdistan Region, Iraq

Correspondence author: Ferhad Mohammed Rasheed, [mmnak1950@gmail.com](mailto:mmnak1950@gmail.com), Mobil +964 7504722127

in spite of modern management, it is still regarded as a life threatening catastrophe<sup>6</sup>. Perforation rate is about 5-10 % of all cases of DU<sup>7</sup>, though it is one of the common surgical emergencies which need immediate surgical intervention<sup>8</sup>. In western countries, the incidence of perforated peptic ulcer is 7-10/100,000 population per year<sup>9</sup>. In young and middle aged patients, the incidence of perforation of (DU) appears to be decreased, but currently there is a marked increase in the number of affected among elders. Perforation peritonitis is the most frequent surgical emergency and (DU) perforation still remains the leading cause<sup>10</sup>. Females account for more than half of the cases and they have more co morbidity than their male counterparts<sup>11</sup>. The frequency of emergency surgery for perforated (DU) has remained steady or even increased<sup>(12, 13)</sup>, this could be attributed to an increase in prescription of aspirin and/or non-steroidal anti-inflammatory drugs (NSAIDs), especially among older age group<sup>14, 15</sup>.

In such cases, patients generally present with acute abdomen, once diagnosis is confirmed, emergency laparotomy is indicated and should be performed. Conservative management is reserved for those whom cannot withstand stress of surgery<sup>10, 16</sup>. The standard treatment of (DU) perforation is performed by simple closure and reinforcement using an omental patch over the top<sup>17, 7</sup>. Laparoscopic repair of perforated (DU) is possible and safe, in which laparotomy associated septic complication of peritonitis might be avoided, however, some patients could suffer from associated

severe medical illness, preoperative shock and long standing perforation<sup>18</sup>.

**Study:** Perforated duodenal ulcer is a common in Duhok Accident and Emergency Hospital and some patients present late and any delay in diagnosis may increase morbidity and mortality.

**Objective of the study:** The objective of this study is to describe clinical features and potential risk factors among patients with perforation of (DU).

### PATIENTS AND METHODS

The current study is a prospective study performed on 35 patients with perforated (DU) attended the Accident and Emergency Hospital in Duhok city, over a period of one year (1st of January 2015 - 31st of December 2015). A number of probable risk factors for perforated (DU) were studied that include smoking, family history of duodenal ulcer, intake of NSAIDs, steroids, alcohol, previous history of duodenal ulcer, age and gender. Full history was taken; then full examination of patients was done. Hematological and radiological studies in patients with stable general conditions in the form of blood grouping, complete blood counts; chest X-ray (in erect position) and abdominal ultrasound were done.

All patients were managed pre-operatively by keeping them on nothing per orum (NPO), inserting nasogastric tube for gastric decompression, fluid infusion, intravenous antibiotics (Cefotaxime 1g/12 hourly and Metronidazole 500mg/8 hourly) and proton pump inhibitor (omeprazole 40mg single dose infusion/24 hour). Exploratory laparotomy was done which disclosed perforation in the anterior

wall of first part of the duodenum. The surgical procedure performed was simple closure of the perforation and application of an omental patch (Graham's patch) with peritoneal toilet drainage.

Post-operatively, all patients in our study were investigated for *H. pylori* serum antibodies (using a serology kit from Artron laboratory, Canada). This test was used because it is easy, acceptable by the patient with high accuracy and low cost. All patients with positive *H. pylori* test were treated by triple eradication therapy (metronidazole or amoxicillin 500mg three times per day plus clarithromycin 500mg twice per day for two weeks and omeprazole 20mg twice daily for 4-6 weeks).

Data were entered and analyzed using Excel 2010. Frequency distribution table were made to describe the patients' characteristics. Z-test for one proportion was used to test sex as a risk factor for DU perforation.

## RESULTS

During the study period, we had 35 cases of perforated (DU). The patients' age ranged from 10-80 years with mean  $\pm$  standard deviation of  $40.1 \pm 17$ . Further classification according to age group is shown in Figure 1. The highest percentages of 28.5% and 25.7% were in the age groups 20-29 and 30-39 years, respectively.

Twenty-eight patients (80%) were males and 7 (20%) were females, thus the ratio of male to female was 4:1 ( $p = 0.0004$ ).

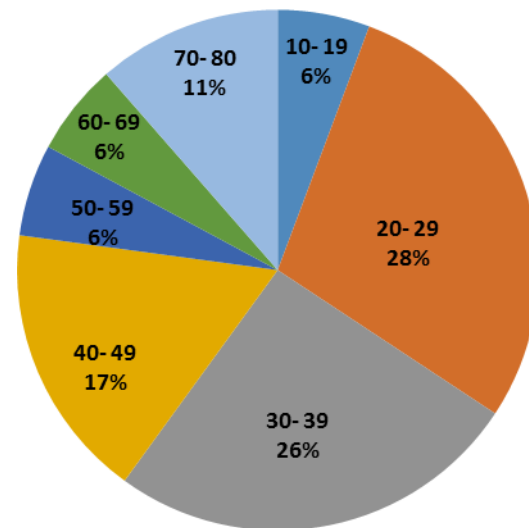


Figure 1: Distribution of patients by age

Searching for probable risk factors, there was a positive test for *H. pylori* in 26 patients (74.2%), followed by ingestion of (NSAID) in 25 patients (71.4%), as shown in (Table 1):

Table 1: Cases of DU perforation according to probable risk factors

Risk factors	No. positive	%
<i>H. pylori</i>	26	74.2
NSAIDs	25	71.4
Smoking	21	60
Previous history of DU	12	34.2
Alcohol	10	28.5
Family history of DU	4	11.4
Steroid intake	2	5.7

Duration of symptoms of perforation before presentation for more than 24 hours was seen in 20 patients (57.1%), while 15 patients (42.8%) presented within 24 hours of symptoms. Twenty-six (74.2%) of the patients in this study were hemodynamically stable at presentation (systolic BP more than 100 mmHg); the other nine patients (25.7%) were

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hemodynamically unstable (systolic BP less than 100 mmHg).

Clinical presentation with generalized abdominal pain was seen in 19 cases (54.2%), epigastric pain in 16 (45.7%) and rigid abdomen in 26 (74.2%), however, most of the patients had more than one clinical presentation, as shown in (Table 2):

**Table 2: Clinical presentation of patients and their frequency rates**

Clinical presentation	No. of patients	%
Generalized abdominal pain	19	54.2
Epigastric pain	16	45.7
Nausea	18	51.4
Vomiting	12	34.2
Rigid abdomen	26	74.2

On chest X-ray, presence of air under the right hemi-diaphragm was found in 30 (85.7%) of the patients; 5 (14.2%) were negative and their diagnosis was made by CT scan or ultrasonography. Regarding the site of perforation, all the patients had perforation in the first part of duodenum anteriorly.

### DISCUSSION

The current study has indicated that there is no reduction in the incidence of perforated (DU); it could be due to the increased use of (NSAIDs) over the last twenty years<sup>19</sup>. Acute perforated duodenal ulcer continues to be regarded as one of the real emergencies of surgery that requires immediate attention and prompt management<sup>20</sup>.

In our study, the incidence of perforation was found in two age groups, age group 2 was between 20-29 years and age group 3 between 30-39 years, which was 28.5%

and 25.7% respectively, these results are comparable to results of a study done by Bin-Taleb et al. in Yemen<sup>21</sup>, when they found more frequent perforation in the younger age group (21-40years), this is probably related to the earlier age of *H. pylori* infection<sup>22</sup>. In another study done in Nigeria, the commonest age group of presentation was in the 4th decade<sup>23</sup>. The findings in our study were different from those found in an Indian study which revealed the highest incidence of peptic perforation in 5th decade of life, and that is a peak active period<sup>24</sup>.

The present study showed that the perforation was more common in males than in females, which is similar to other studies<sup>24</sup>. This might be due to the higher prevalence of smoking and alcohol among males compared to females<sup>21</sup>.

Other risk factors recorded in our study were *H. pylori* infection, NSAIDs, smoking, previous history of DU, alcohol, family history and steroid intake.

It has been shown that the prevalence of *H. pylori* infection in patients with a perforated duodenal ulcer is 74.2% and is a significant risk factor for perforated (PUD) especially in young patients, which constitute majority of our patients, these results were near to the results of another study done in Nigeria that showed the prevalence of *H. pylori* infection in patients with a perforated PUD to be (65%- 70%)<sup>21</sup>. *H. pylori* infection in that population has been postulated as the main cause<sup>25</sup>. The result was higher than the results of a study done in United Kingdom and Taiwan 20.5% and 7.7%<sup>25, 26</sup>, respectively.

The use of NSAIDs appears to be associated with tendency to ulcerate and

perforate, as shown here, 71.4% of the patients confirmed their usage. Our results in this study are in contrast with the results found by a study done in Japan that showed NSAIDs to be a risk factor for perforation in 24% of cases<sup>27</sup>. In another study only 9.2% had a history of taking NSAIDs<sup>23</sup>. This may be explained by analgesic abuse in our community.

Other factors frequently noted in our study are smoking and alcohol drinking. These two factors were also found to be important in comparable studies to other studies<sup>28</sup>. It is known that smoking inhibits pancreatic bicarbonate secretions, which tend to neutralize acid secretion, thus predisposing to increased acidity in the duodenal bulb. It also causes delay in duodenal ulcer healing, Alcohol on the other hand predisposes to gastric ulceration, stimulates gastric acid secretion as well as enhancing gastrin release<sup>29</sup>. In a study done in Nigeria, a high incidence of perforated PUD was found amongst young people which may be attributed to smoking and alcohol (72.4%). In another study done by Sondashi, he found that 57% of the patients confirmed drinking alcohol regularly and 34% smoked cigarettes<sup>28</sup>.

The factors mentioned above are in agreement with the analysis reported by Parmar and Hiren in India<sup>24</sup>.

In this study (34.2%) of patients had a previous history of DU. This is in agreement with a study done in Europe by Kocer where half of cases had no history of ulcer disease<sup>30</sup>. While another study done by Sondashi et al., show no history of peptic ulcer disease<sup>28</sup>.

Most of our patients in the study presented with perforation had no family history

(88.6%). This is in agreement with a study done in Kurdistan<sup>31</sup>.

Regarding hemodynamic condition, (25.8%) were unstable. (74.2%) were stable according to BP measurement, which is in agreement with studies done by Ugochukwu *et al.* in Nigeria<sup>23</sup>. And in another study systolic blood pressure >90 mm Hg in (30.2 %). systolic blood pressure <90 mm Hg were (50.0 %) <sup>32</sup>. In the present study, more than half of the patients presented late, more than 24 h from the onset of symptoms. Our findings are in agreement with a study done in Northeast Africa in 2010<sup>12</sup>. Regarding clinical presentation, the commonest presentation was rigid abdomen in 26 cases (74.2%), followed by abdominal pain in 19 cases (54.2%), epigastric pain in 16 cases (45.7%), nausea in 18 cases (51.4%) and vomiting in 12 cases (34.2%) This is in agreement with another study done by Noguiera et al.<sup>12</sup>.

Presence of air under the right hemidiaphragm was recorded in 30 (85.8%) of our patients. This is in agreement with a study done in Yemen and might be related to the less number of patients attending to the hospital with sealed perforations<sup>12</sup>. Regarding the site of perforation, all patients had anterior duodenal perforations; the same result was reported in a study in Nigeria<sup>23</sup>. The reasons were firstly that most of the patients had moderate to severe peritoneal soiling that precludes any type of definitive anti-ulcer surgery. Secondly simple closure of perforated duodenal ulcer has now generally accepted as a standard procedure and is been shown to be quick and simple to perform, safe with acceptable morbidity and mortality<sup>13,32</sup>.

**Limitations of study**

1. Lack of control cases, therefore it was not possible to statistically confirm the risk factors (except sex).
2. Lack of long-term follow-up of the cases involved in the study.

It may be concluded from the above mentioned findings that younger male patients (20-39 years) were frequently affected. The commonest risk factors for perforation seem to be *H. pylori* and ingestion of NSAID. Many patients presented after more than 24 hours. The common presenting symptom was generalized abdominal pain.

Studies with larger sample size and long term follow-up are recommended to collect more information on the etiology and outcome of perforated duodenal ulcer in Duhok. A protocol to investigate high risk peptic ulcer patients, e.g. smokers, alcoholic and those on chronic non-steroidal anti-inflammatory drugs, by esophago- gastro- duodenoscopy, is also recommended.

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## ثوخته

### فاکتەریڤ ڤو بانډوری ل کونبونا برینا دوازة طریبی دکەن ل بانیری دهوکی

**ئیشەکی:** کونبونا برینا هەرسی دەیتە هەمارتن ڤ بوارەکی بەرەلاز ڤ بوراڤن زک ئیشانا تەنطاف دا. ئەتەرین بەرەلاز ڤ بەکتەریا هیلکو بەکتەر ئایلوری، دەرمانین کولونە نەیین ستیریویڤی، کیشانا جکارا، ڤ کەتندا توشی برینا دوازەطریبی بییت، طەخارنیت کحولی، دیروکا خیزانی هەبیت ب کونبونا برینا هەرسی و دەرمانین ستیریویڤی. نارمانجین طی طەکولینی ظاظرتن و دیارکرن و فاکتەریڤ مەترسیدار بو کونبونا برینا دوازة طریبی ل تاریرطەها دهوکی.

**ریکین طەکولینی:** طەکولینا ئیشیبیکری، ئیک دەیت ڤ 35 نەخوشین توشی کونبونا برینا دوازةطریبی بین هاتینە نەخوشانا تەنطاطیا دهوکی یا فیرکنی ڤ ماوی سالتەکی دا (هەر ڤ 1) ی کانوونا دووی 2015 تا (31) ی کانوونا ئیکی 2015). طەکولین ب هەمارەکا فاکتەریڤ مەترسیدار ل سەر توشبونا کونبونا برینا دوازةطریبی هاتە نەجامدان.

**نەجام:** طەکولین ل سەر سیه و ئینض نەخوشین توشبووی ب کونبونا برینا دوازةطریبی هاتەکرن. نەمەنن وان دناظبەرا (15-80) سالان بون. ریزا بلند یا تەمەنی 20 - 39 سالیادا بون. 28 (80%) نیر بوون و 7 (20%) مئ بوون. و ریزەیا نیرا بو میان 1:4. هیلکو بەکتەر ئایلوری ڤ 26 (74.2%) نەخوشاندا یا نەریڤوو، 25 (71.4%) نەخوشا دەرمانین کولونە بین نەیین ستیریویڤی بکارنابوون، 21 (60%) ڤ نەخوشان جطارکیش بوون، 10 (28.5%) ڤ نەخوشان طەخارنیت کحولی طەخاربوون، 12 (34.2%) ڤ نەخوشان مێڤو یا ئیشا برینا دوازةطریبی هەبوو، 4 نەخوشان کو دبیتە (11.4%) مێڤو یا خیزانی یا نەریڤی هەبوو، و بتتی 2 (57%) ڤ نەخوشان دەرمانین ستیریویڤی بکارنابوون. ماوی دیاربوونا نیشانان کیمتر ڤ 24 دەمەمیرا (57.2%) بوو و تتر ڤ 24 دەمەمیرا (42.8%) بوو، ئۆوین نیشانا وان زکئیشانا تەنطاط 19 (54.2%) بوون، و 12 (48.7%) ڤ نەخوشان ئیشان ڤ لای سەری بی زکی دا هەبوو، و 18 (51.4%) ڤ نەخوشان ئیلنجی هەبوو. و 12 (34.2%) ڤ نەخوشان طەرشیان هەبوو، و 26 (74.2%) ڤ نەخوشان زکی رەقبوی هەبوو.

**دەرئەنجام:** هیلکو بەکتەر ئایلوری و خارنا دەرمانین کولونە نەیین ستیریویڤی رولەکی سەرەکی بی هەتی وەک فاکتەریڤ مەترسیدار ڤ ضیبونا کونبونا برینا دوازةطریبی دا. تەمەن و رەطەز هەر وەسا ڤ هینە هەمارتن ڤ فاکتەریڤ مەترسیدار ڤ کونبونا برینا دوازةطریبی و شوک و طیروبونا ماوی دیارکرنی ڤ فاکتەریڤ هەترە طرنطن بو نەجامین ئشتی نەشتەرطریبی. باشتربوو طەکولینیەکا مەزنتر هاتبا کرن ڤبەر کو قەباری طەکولینا مە بی بضیکە ڤ (35) نەخوشان ئیک هاتین، دا دشیاندا ڤ بو کومکرنا زیدەتر ئیزانینا ل سەر نەطریڤ کونبونا برینا دوازةطریبی ل بانیری دهوکی، هەر وەسا طەکولینا دیفسوونا دومدریز مە نەبوو.

دانانا ئروتوکولا بو تشکینینا نەخوشین تتر هەستیار بو توشبوونی ب نەخوشیا برینا دوازةطریبی ب ریکا دویرینا طەدە و دوازةطری، بو نمونە جطارەکیشا، و ئۆوین طەخارنیت کحولی طەخون، و ئۆوین دەرمانین نەیین ستیریویڤی ب نکار دینن بو کولونین دومدریز.

## الخلاصة

### العوامل التي تؤثر على ثقب قرحة الاثني عشري مدينة دهوك

#### الخلفية والأهداف:

انتقاب قرحة الهضمية تعتبر حالة شائعة بين حالات البطن الطارئة جراحيا. الأسباب الشائعة هي الملوية البوابية ، الأدوية غير الستيرويدية المضادة للالتهابات ، التدخين ، مسبقا مصاب بقرحة الاثني عشر ، الكحول ، التاريخ العائلي لانتقاب قرحة الهضمية والادوية الستيرويدية . هذه الدراسة هدفت لتمييز و وصف عوامل الخطر المحتملة لقرحة الإثني عشري في محافظة دهوك.

**طرق البحث:** الدراسة المتوقعة فيه شملت 35 مريض بقرحة الإثني عشري المنفجره تحضر مستشفى دهوك الطوارئ التعليمي على مدى سنة واحدة ( 1 من كانون الثاني 2015 - 31 من كانون الاول 2015). تمت دراسة عدد من عوامل الخطر المحتملة لانفجار القرحة الاثني عشر .

**النتائج:** خمسة وثلاثين مريضا مصابا بانفجار القرحة الاثني عشر درست . اعمارهم تتراوح بين 15-80 عاما. أعلى نسبة في الفئة العمرية 20-39 سنة . 28 ( 80 % ) كانوا ذكورا و 7 ( 20 % ) كانوا إناث وكانت نسبة الذكور إلى الإناث 4:1. الملوية البوابية كانت إيجابية في 26 ( 74.2 % ) مريضا ، 25 ( 71.4 % ) مرضا كانوا قد استعملوا الادوية غير الستيرويدية المضادة للالتهابات ، و 21 ( 60 % ) مدخنو 10 ( 28.5 % ) من المرضى شارب كحول ، والتاريخ الماضي من مرض القرحة الهضمية المزمنة في 12 ( 34.2 % ) مريضا ، و 4 مرضى ( 11.4 % ) لديهم تاريخ عائلي ايجابي و فقط 2 ( 5.7 % ) مرضا كانوا قد استعملوا الادوية الستيرويدية . مدة العرض أقل من 24 ساعة كانت ( 57.2 % ) و لأكثر من 24 ساعة كانت ( 42.8 % ) ، وكانت الأعراض المرتبطة آلام في البطن المعمم 19 حالة ( 54.2 % ) ، ألم شرسوفي في 16 حالة ( 45.7 % ) ، والغثيان في 18 ( 51.4 % ) حالة ، والتقيؤ في 12 ( 34.2 % ) حالة والبطن جامدة في 26 ( 74.2 % ) حالة.

**الاستنتاجات:** الملوية البوابية و تناول العقاقير غير الستيرويدية المضادة للالتهابات تلعب دورا رئيسيا كعوامل خطر في حدوث انتقاب القرحة الاثني عشر . العمر والجنس يعتبران أيضا من عوامل الخطر لانقاب قرحة الاثني عشر والصدمة ومدة عرض التأخير من العوامل الهامة لنتائج ما بعد العمليات الجراحية . من المستحسن القيام بدراسة أكبر لأن دراستنا هي من الحجم الصغير ( 35 مريضا ) ، لتكون قادرة على جمع المزيد من المعلومات عن مسببات قرحة الاثني عشر المتعبة في دهوك ، وكذلك تفتقر إلى دراسة متابعة طويلة المدى. وضع بروتوكولات لفحص المرضى المحتمل اصابتهم بالقرحة الاثني عشر بواسطة تنظير المرئ- المعدي -الإثنا عشري ، مثل المدخنين ، شاربي الكحول ومستخدمي العقاقير غير الستيرويدية المضادة للالتهابات المزمنة.