

## Clinical Versus Endoscopic Diagnosis in Upper Gastrointestinal Hemorrhage

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### ABSTRACT

Upper GI hemorrhage is a serious medical emergency. It is a common cause for hospital admission worldwide. The source of hemorrhage is usually gastroesophageal varices, peptic ulcer, acute gastric erosions, Mallory-Weiss tear and erosive esophagitis. Less common causes are upper GI malignancies, coagulation disorders, AV malformations and connective tissue disorders. In this study provisional clinical diagnosis was made in 100 patients with upper GI hemorrhage on the basis of history, physical examination and non-invasive investigations. The main aim of this study was to compare the results of provisional clinical diagnosis with that of endoscopic findings. The main advantage of this study is to find out whether treatment can be started earlier on clinical grounds in those cases of upper GI hemorrhage where clinical diagnosis is relatively accurate and easy to establish. The results of this study showed that clinical diagnosis was correct in 72% of cases of upper GI hemorrhage. The diagnostic accuracy was highest for variceal bleeding where diagnosis was correct 38 out of 40 cases of variceal bleeding (95%). The accuracy decreased markedly when the source of hemorrhage was other than gastroesophageal varices in cirrhotic patients. Clinical diagnostic accuracy was also high for duodenal ulcer (64.7%), acute gastric erosions (64.2%), Mallory-Weiss tear (66.6%) and Pseudoxanthoma elasticum (100%). The clinical diagnostic accuracy was low for gastric ulcer (50%), erosive esophagitis (50%) and portal hypertensive gastropathy (0%). The results of this study are in contrast with the results of previous studies conducted in developed countries. But these results are in accordance with the data published in developing countries.

**Keywords:** Upper Gastrointestinal (GI) Hemorrhage, varices, peptic ulcer, acute gastric erosions,

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### INTRODUCTION

Upper GI hemorrhage is a serious event that carries a considerable mortality and morbidity. It remains a common cause for admission to hospital worldwide. Bleeding from GIT is manifested by both hematemesis and melena or either alone. Blood may be fresh red or darkened as a result of conversion by gastric acid to hematin. Source of upper GI hemorrhage is usually above the ligament of Trietz. The purpose of this study is comparison of the results of clinical diagnosis with that of endoscopic findings. The importance of this study lies in the fact that endoscopic help is not available all the time and sometimes condition of the patient does not allow for endoscopy or patient is not willing for it. In such cases proper diagnosis and

prompt management depends upon the clinical judgment of the physician and the help of readily available noninvasive investigations. Uncritical reliance on information obtained by machines can be dangerous. Our knowledge of the medical evolution shows that too much faith has sometimes been placed on the pronouncement of the different types of investigations, when forgetting the importance of clinical picture; physicians have based their activities too exclusively on the laboratory reports. Today with a better knowledge of different possibilities and limitations, the expert physicians tend to scrutinize sagaciously and objectively the information obtained from both sources i.e., from investigations and from their own personal examination of the patient. All the marvelous discoveries of recent time cannot remove the physician from his post of honor in determining morbid phenomenon at the bedside of the patient.

Upper GI hemorrhage has a number of causes. The most important causes, which account for about 90% of all cases of upper GI hemorrhage, are as follows: variceal and portal hypertensive gastropathy, duodenal ulcer, gastric ulcer, acute gastric erosions and arteriovenous malformations.

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The remaining causes are relatively less common and they are as follows: erosive esophagitis, gastric tumours like carcinoma, lymphoma, polyps, leiomyoma and leiomyosarcoma, duodenal diverticula, vasculitis, connective tissue disorders, aortic aneurysm, hemobilia, pancreatitis and pancreatic carcinoma, hereditary hemorrhagic telangiectasia, uremia and coagulation disorders.

## MATERIALS AND METHODS

This open, prospective and comparative study was carried out at medical unit II of Victoria Hospital Bahawalpur from January 2013 to January 2014. The main aim of this study was to make the provisional etiological diagnosis of upper GI hemorrhage on the basis of history, physical examination and noninvasive investigations and to start the treatment immediately as the endoscopic help is not available all the time or the condition of the patient does not allow immediate endoscopy. Later the provisional diagnosis was compared with the endoscopic diagnosis. One hundred cases of upper GI hemorrhage were included from different medical units of Victoria Hospital Bahawalpur. Both male and female patients of age 12 years or above, presenting with upper GI hemorrhage (hematemesis and malena) were included in the study. Patients with definite source of bleeding / hemorrhage in nose or throat were excluded. Patients who were not fit for endoscopy due to some medical problem like respiratory or cardiac failure or non-cooperative or non-willing patients were also excluded from the study.

The provisional diagnosis was made by taking history, which includes the duration and amount of hematemesis and colour of the vomitus. In case of associated pain detailed inquiry about its onset, location duration, severity, radiation and periodicity was made. Both aggravating and relieving factors were asked. Precipitating factor like NSAIDs use or alcohol intake was asked. Any history of jaundice and its relapses and the sequelae of chronic liver disease like abdominal distension, hair loss and edema was inquired. Any history of dysphagia, heartburn, weight loss and loss of appetite was asked.

## RESULTS

Out of 100 patients presenting with upper GI hemorrhage, 40 patients had variceal bleeding. Among them 23 were male and 17 were females with an age range of 17 – 55 years and mean age of  $29 \pm 15$  years. Out of 40 patients with variceal bleeding, the provisional etiological diagnosis of cirrhosis was correct in 2(5%). Among these 2

patients one was later found to be idiopathic portal hypertension. Past history of jaundice was present in 28(70%) patients while it was not found in 12 (30%) patients. All patients had one or other signs of cirrhosis in the form of splenomegaly, abdominal distension, gynaecomastia, caput medusae, loss of normal hair distribution and decreased area of liver dullness. Serology for viral markers showed that 25 (62.5%) patients were positive for hepatitis B surface antigen and 10(25%) patients were positive for anti-HCV antibodies. In the remaining 5 patients without any viral marker, 3 had disturbed liver function tests with raised enzymes and prolonged prothrombin time but ultrasound confirmed the presence of cirrhotic changes in the liver. In the last two patients, liver function tests were normal with not detectable viral markers. Splenic vein thrombosis was detected by Doppler ultrasound in one patient and dilatation of portal vein in the other patient as an evidence of idiopathic portal hypertension. Liver echotexture was normal in both of these patients. All the patients reached hospital within 1 to 6 hours. Onset of hematemesis was abrupt with no prolonged nausea and retching and colour of vomitus was red with multiple clots. The amount of blood loss ranged from 0.5 to 1.5 liters. Hypotension, tachycardia and pallor were present in 22 patients while the remaining patients were hemodynamically stable. Signs of hepatic encephalopathy were present in 10 patients while the remaining patients were well oriented in time and space.

17(17%) patients were suffering from duodenal ulcer (9 males and 8 females). Age range was 25 – 57 years with a mean age of  $33 \pm 7$  years. Three of male patients were smoker while all the females were non-smokers. Clinical diagnosis was correct in 11 patients while in the remaining 6 patients it was incorrect. 11 patients gave the typical history of duodenal ulcer with hunger pains and relief of symptoms with food and antacids while in 6 patients no such history can be obtained. In the symptomatic patients average duration of symptoms was from 1 – 5 years. 3 of the non-symptomatic and 1 of the symptomatic patient had to use NSAIDs for various complaints like migraine or osteoarthritis etc. remaining patients avoided their use because of precipitation of symptoms. None of the patients were alcoholic. History of malena was present in 13 patients. Hypotension, pallor and tachycardia were present in 6 patients while the remaining patients were hemodynamically stable. Colour of vomitus was coffee ground in most of the patients and it was preceded by nausea.

Gastric ulcer was present in 14 patients (14%), 8 males and 6 females. Age range was 33 – 70 years with a mean age of  $52 \pm 10$  years. Clinical

diagnosis was correct in 7 patients. 7 patients gave the typical history of gastric ulcer with epigastric pain, increase in pain after meals, early satiety and relief with antacids. Mild epigastric tenderness was present in 5 patients. 3 patients were suffering from chronic liver disease but the source of hematemesis was not variceal bleeding. 2 patients predominantly had symptoms of reflux esophagitis. 3 patients were smoker and also 3 patients were using aspirin for osteoarthritis. In 3 patients hematemesis was responsible for hypotension and pallor; others were having tachycardia and mild anemia only. Colour of vomitus was bright red in most of cases.

## DISCUSSION

Bleeding from upper gastrointestinal tract is a common medical emergency that carries a considerable morbidity and mortality. Early endoscopy is the "gold standard" approach in the diagnosis and management of the upper GI hemorrhage. However the facility for endoscopy is not always available in the admitting hospital and even when it is available, there is an unavoidable delay between admission and treatment. Furthermore emergency sclerotherapy, in actively bleeding patients, carries a higher rate of complications.

In such circumstances there is a greater need for a more accurate clinical judgment so that proper treatment can be started immediately after the resuscitative measures. This study was planned to compare the accuracy of clinical diagnosis with that of endoscopic findings. In a similar study it was found that clinical assessment is poor at predicating the source of upper GI bleeding and is correct in about 40% of cases. But in our study results show that clinical diagnosis was correct in 72% cases when compared with endoscopic diagnosis. The explanation for this difference in results is due to the fact that etiology of upper GI bleeding varies in different populations. When upper GI bleeding is associated with such a disease like cirrhosis of liver then the accuracy of clinical diagnosis increases as the signs and symptoms of cirrhosis help in establishing the diagnosis of variceal bleeding.

In a large survey it was found that variceal bleeding is responsible for 10% of cases of upper GI bleeding in the Western population. In the recent surveys the percentage of variceal bleeding varies from 3% to 3.7% of the total cases of upper GI bleeding.

The reverse is true in the developing countries. Here the infectious diseases are common and viral hepatitis has high prevalence rate. In Pakistani adults, HBV is responsible for 30% cases of acute viral hepatitis. The carrier rate of hepatitis B surface

antigen is 10% to 14% which is defined as infection with HBV which persists for more than 6 months. Among these patients one third were positive for HBeAg with a potential of high degree of infectivity and progression of the disease.

Similarly seroprevalence of HCV infection was found in 6% of the healthy blood donors in our population and this carrier rate increases with the increasing age. Among the anti HCV positive individuals needle stick injury due to non-disposable syringes, was found to be the most important cause followed by blood transfusion. The incidence of HCV infection is even more in the chronically hemodialysed patients. In a study conducted in Victoria Hospital Bahawalpur about one third of the patients on chronic hemodialysis were anti HCV positive. Incidence of seropositivity increases with the increasing duration of dialysis and number of blood transfusions.

All this data is in sharp contrast to that of advanced countries like USA where the seroprevalence of HCV infection is 0.3% and that of HBV is 0.2%. Infection with HBV and HCV is the most important factor for developing cirrhosis in this part of the world.

Therefore variceal bleeding resulting from cirrhosis has a greater contribution in the pathogenesis of upper GI bleeding in our population. A positive history of jaundice and presence of the signs of cirrhosis like splenomegaly, ascites, edema, encephalopathy and shrunken hard liver help in establishing the etiology of upper GI bleeding clinically. Therefore in our study clinical diagnosis was correct in 38 out of 40 cases of variceal bleeding. The diagnosis was incorrect in two cases they were not having the classical signs of cirrhosis and they were wrongly diagnosed as suffering from peptic ulcer. Both of these patients gave the history of epigastric pain. In one patient with splenic vein thrombosis the pain was due to chronic pancreatitis leading to splenic vein thrombosis and in the other patient with idiopathic portal hypertension it was the result of mild gastritis noted on endoscopy. In both these patients the cause of upper GI bleeding was variceal hemorrhage.

However the accuracy of clinical diagnosis decreased markedly when the cirrhosis was associated with other lesion of GIT which can causes upper GI bleeding. In our study 10 patients of cirrhosis were not bleeding from the varices but the source of hematemesis was some other lesions like acute gastric erosions or peptic ulcer. Diagnosis was incorrect in 7 out of 10 patients in this case. The decreased accuracy of clinical diagnosis in this case is due to the fact that the incidence of cirrhosis is higher in our population and signs of cirrhosis may

mask the manifestations of the other diseases. This is in accordance with the statement that although upper GI bleeding in a patient with cirrhosis suggests a variceal source, up to one quarter of those patients will be bleeding from another lesion. However, detailed history and physical examination may help in the proper diagnosis.

In case of duodenal ulcer diagnosis was correct in 11 out of 17 patients. Diagnostic accuracy increases when the history is longstanding and the patient is having the typical presentation of the disease with hunger pains and relief with food and antacids. However the characteristic signs and symptoms may be absent and the diagnosis should be considered even if a history characteristic of ulcer disease is not obtained.

It is the leading cause of upper GI bleeding in Western population where it accounts for 25% of cases of upper GI hemorrhage. In a study conducted at PIMS, analyzing the results of upper GI bleeding, the relative contribution of duodenal ulcer in upper GI bleeding was 11.8%.

In case of gastric ulcer clinical diagnosis was correct in 7 out of 14 cases. The absence of ulcer symptoms led to the diagnostic inaccuracy in 7 patients. The absence of symptoms may be due to the older age group of the people suffering from this disease. The use of NSAIDs was also higher in these patients as self-medication is common in our country. In Western population gastric ulcer contributes 13% to 25% cases of upper GI bleeding in two different studies. In Pakistani population, it is responsible for 6.4% of cases of upper GI bleeding.

*H. pylori* is common in the pathogenesis of both duodenal and gastric ulcers. *H. pylori* is more common in the developing countries due to poor hygiene, over crowded families and low standard of living. Infection with *H. pylori* is acquired at an early age, which either results in duodenal ulcer or atrophic gastritis, gastric ulcer and gastric malignancy.

In one study conducted at Jinnah Postgraduate Medical Center, Karachi, *H. pylori* colonization was detected in 39 out of 160 patients. Among these patients 28 had duodenal ulcer and 15 had chronic gastritis. In another study conducted at Lady Reading Hospital, Peshawar, out of 100 dyspeptic patients, 74% were positive for *H. pylori*.

Acute gastric erosions are also a common cause of upper GI hemorrhage. It is either due to some severe stress on the body or due to ingestion of aspirin and other NSAIDs. The diagnosis was easy in most of the cases because either the patient is in severe distress due to head trauma, severe burns, sepsis, artificial respiration, multi organ failure or the patient has ingested aspirin or other NSAIDs. In our study diagnosis was correct in 8 out of 10 patients.

In a Western study the incidence of acute gastric erosions was 8.2%. In the study conducted at PIMS the incidence of acute gastric erosions was 3.9%<sup>159</sup>. In our study the incidence is near to the international study which is due to the indiscriminate use of NSAIDs by our population and relatively serious condition of the patients referred to a tertiary care center like Victoria Hospital Bahawalpur.

Diagnosis of erosive esophagitis was correct in 2 out of 4 patients in our study. Its incidence in Western countries varies from 12 to 16% of the cases of acute upper GI hemorrhage, while in study at PIMS its incidence was 12.9%. One of our patients was suffering from AIDS. He had severe odynophagia and dysphagia, which were due to some opportunistic infection. It ultimately led to severe esophagitis and hematemesis. Clinical diagnosis was correct in this case as the typical appearance of esophagitis on barium swallow examination helped in establishing the diagnosis.

The two incorrect diagnoses were due to the inconsistent history of heartburn and associated epigastric pain which lead to establishing the wrong diagnosis of peptic ulcer.

Diagnosis of Mallory-Weiss syndrome was correct in 4 out of 6 patients. This condition is increasingly recognized on endoscopy. Diagnosis is easy to establish when the patient has prolonged history of retching but the history of retching and vomiting may be lacking in half of the cases. Its incidence in different Western studies varies from 3.9% to 10.3%<sup>158,160</sup>. In a study at PIMS its incidence was 1.3%. The high incidence in the Western population is probably due to alcohol abuse. One of our patients also gave the history of alcoholic binge after which he developed prolonged retching and vomiting, which end up with hematemesis. Rests of our patients were suffering from other conditions like hyperemesis gravidarum, gastroenteritis and renal failure.

Gastric carcinoma was responsible for hematemesis in one patient. Diagnosis was incorrect in this case. Its relative contribution in upper GI hemorrhage in the Western population varies from 2% to 2.5%. In a study at PIMS, its incidence was 0.3%. The prognosis was poor in this case because the tumor had already invaded the deeper tissues. The early diagnosis of gastric cancer is very important, as 5 years survival in early resection is in the range of 50% as compared to 20% in late detected cancer. This patient had the symptoms of weight loss, early satiety and abdominal pain which were wrongly considered to be resulting from gastric ulcer.

Pseudoxanthoma elasticum is a rare cause of upper GI bleeding. It was present in one patient and

the diagnosis was correct in this case. This patient presented three times with the similar complaints of hematemesis in various hospitals. Previous endoscopy was normal. This condition is due to deposition of calcium on the elastic fibers of skin, eye and blood vessels. This leads to abnormal narrowing and fragility of the blood vessels. It can cause abnormal bleeding from gastrointestinal tract and ischemic symptoms of other organs.

## CONCLUSION

As the patients cannot take the medicines orally during the period of hematemesis, injectable medicines are required. The high cost of injectable preparations of Somatostatin analogues and proton pump inhibitors matters a lot for the poor population of our country. In such circumstances it is responsibility of attending physician to make a balanced diagnosis before starting the treatment.

This study also highlights the importance of prophylaxis of viral hepatitis in our country because frequency of HBV and HCV infection is quite high. This includes vaccination for HBV infection and proper screening of blood donors both for HBV and HCV infection as the maximum number of patients affected are between 20 to 50 years which belong to the productive class of our society.

This data also highlights the indiscriminate use of NSAIDs by our population for long periods. Acute gastric erosions can be avoided in these patients if proper precautions are taken when using NSAIDs, like concomitant use of antacids and H<sub>2</sub> receptor antagonists, and taking the NSAIDs after meals.

Correct clinical judgment will also help in establishing the diagnosis of rare diseases like Pseudoxanthoma elasticum in which case endoscopy is usually normal. This will help a lot in reassuring the patient about the benign nature of bleeding and at the same time avoiding unnecessary investigations.

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