Successful Treatment of Acute Inferior Myocardial Infarction by Percutaneous Coronary Intervention in a Patient with Upper Gastrointestinal Bleeding: A Case Report

MENG-CHIEH WU, WEN-SHIANN WU

Introduction

Gastrointestinal bleeding is a common disease in critical patients. Coronary artery disease is also frequent in patients who are older. Hence, myocardial infarction is a relatively common and frequent complication of gastrointestinal bleeding (1-2). Bhatti N et al. demonstrated that the in-hospital mortality rate was 11.5% for myocardial infarction in patients admitted to an intensive care unit with gastrointestinal bleeding (1). Emenike E et al. demonstrated that 13% of patients fulfilled both enzymatic and electrocardiographic criteria for myocardial infarction and 12% of patients had electrocardiographic evidence of myocardial ischemia but did not meet the criteria for myocardial infarction (2). However, a combination of gastrointestinal bleeding with acute myocardial infarction is difficult to manage. Percutaneous coronary intervention is still controversial in patients with gastrointestinal bleeding. We report an 80-year-old woman who suffered from upper gastrointestinal (UGI) bleeding and an inferior wall ST elevation myocardial infarction that was successfully treated by percutaneous coronary intervention for the acute myocardial infarction after endoscopic therapy for the gastric ulcer bleeding.

Case Report

The 80-year-old woman was suffering from a tarry stool and as a result visited our emergency...
room. A blood transfusion was given due to her hypovolemic status. In addition, she received an endoscopic examination and this revealed a deep ulcer on the anterior gastric wall and lesser curvature of the antrum with visible vessel bleeding. Based on this diagnosis, a diluted epinephrine injection was performed via endoscopy to stop the bleeding. A proton-pump inhibitor was also prescribed. However, the patient suffered from chest pains on the 4th day after hospitalization. Initial electrocardiography (ECG) and cardiac enzyme examinations were done immediately after the chest pains were reported. The first ECG revealed no ST segment change and the serum cardiac enzyme tests revealed creatine kinase (CK) 59 IU/L, CK-MB 1.6 ng/dL and Troponin I 1.48 ng/mL initially. However, the symptoms recurred 12 hours later. The follow-up ECG showed inferior leads ST segment elevation (Fig. 1) and the serum cardiac enzyme levels showed an increase to CK 390 IU/L, CK-MB 71.3 ng/dL and Troponin I 4.5 ng/mL. Clearly the clinical symptoms were progressive and therefore coronary angiography was performed, which revealed total occlusion of the distal part of the right coronary artery (RCA) (Fig. 2A). Percutaneous coronary intervention (PCI) was carried out after heparination using 10000 units. Balloon angioplasty was performed and a thrombuster was used. However, the flow through the RCA was found to be only TIMI 1 after this treatment. Hence, adjuvant treatment involving a tirofiban intracoronary injection was given at a loading dose of 10 mcg/kg for more than 3 minutes with a maintenance dose 0.15 mcg/kg/min. We followed up by monitoring the platelet count, PT and APTT. The platelet count was stable and we kept the APTT below 70 sec. The dose of heparin was adjusted often according to the APTT. However, the puncture site showed persistent bleeding and therefore we discontinued tirofiban early. We compressed the puncture site directly to stop the bleeding and the total dose of tirofiban given was only 12.5 mg. In addition, we also gave a loading dose of clopidogrel 300 mg, but did not prescribe any aspirin. Finally, the distal RCA flow became TIMI 3 (Fig. 2B). There was no stent deployed in the distal RCA. The medication post-PCI included intravenous pantoprazole 40 mg twice a day and clopidogrel 75 mg once a day. The patient progressed well and was discharged uneventfully five days later. We prescribed clopidogrel 75 mg once a day, carvedilol 3.125 mg once a day, isosorbide-5-mononitrate 10 mg twice a day and lansoprazole 30 mg once a day at the patient’s discharge.

Discussion

Acute myocardial infarction occurring in association with acute gastrointestinal bleeding is a catastrophic event. It is important to exclude the possibility of myocardial infarction in any patients with acute gastrointestinal bleeding. This is important even if they deny chest pain but have warning signs of hypoperfusion, such as syncope, confusion, dizziness or hypotension. Management of these two issues in combination is difficult. Reperfusion therapy including fibrinolytic therapy and percutaneous coronary intervention is suggested for ST elevation type myocardial infarction. However, a patient with acute gastrointestinal bleeding...
bleeding is contraindicated for fibrinolytic therapy. In the event of absolute contraindication of fibrinolytic therapy, prompt coronary reperfusion can be achieved by percutaneous coronary intervention; this will probably result in a smaller infarct and better left ventricular function\(^6\). Active bleeding or bleeding diathesis is an absolute contraindication for fibrinolysis and an active peptic ulcer is a relative contraindication for fibrinolysis\(^7\).

With this patient, we performed angioplasty and thrombubster at first. We gave routine heparin of 10000 units before PCI because thrombosis in the RCA was considered; however, the flow of RCA was only TIMI 1 initially. Therefore, we added tirofiban and this resulted in improvement to a flow, which increased to TIMI 3.

Heparin is necessary when carrying out percutaneous transluminal coronary angioplasty and such treatment may worsen acute gastrointestinal bleeding. Hence, in this case, we stopped the bleeding before percutaneous coronary intervention. In addition, treatment with glycoprotein IIb/IIIa inhibitors may worsen UGI bleeding. No definitive treatment with glycoprotein IIb/IIIa inhibitors has been described for patients who combine ST elevation myocardial infarction and UGI bleeding. In this patient, we monitored the APTT and clinical symptoms carefully. With this patient, the total dose of tirofiban was less than usual and, in addition, we adjusted the dose of heparin often based on the APTT and clinical symptoms.

Endoscopic injection of epinephrine is of benefit when controlling gastrointestinal bleeding\(^8\). In patients suffering from upper gastrointestinal bleeding and acute myocardial infarction, urgent endoscopy has a most beneficial effect on patients with upper gastrointestinal bleeding as the initial event and also those presenting with hematemesis and hemodynamic instability\(^9\). This patient received an endoscopic injection of epinephrine to stop gastric ulcer bleeding and we performed successful percutaneous coronary intervention for ST elevation myocardial infarction with adjuvant treatment with thrombuster and glycoprotein (GP) IIb/IIIa inhibitors infusion. Furthermore, we gave a loading dose of 300 mg of clopidogrel to the patient and, in addition, clopidogrel was prescribed promptly post-PCI as a replacement for aspirin. According to the 2007 Focused Update of the ACC/AHA/SCAI 2005 Guideline Update for Percutaneous Coronary Intervention Class IIa recommendations, when patients have an absolute contraindication to aspirin, it is reasonable to give a 300 mg to 600 mg loading dose of

---

Fig. 2  (A) Coronary angiography revealing total occlusion of the distal right coronary artery. (B) The final coronary angiography showing a flow of TIMI 3 through the right coronary artery after percutaneous coronary intervention.
clopidogrel administered at least 6 hours before PCI and/or treatment with GP IIb/IIIa antagonists administered at the time of PCI\(^{(10)}\). However, there is no definitive treatment guidelines or studies of ST elevation type myocardial infarction with UGI bleeding. Patients with upper gastrointestinal bleeding are not suitable to receive PCI, but reperfusion therapy is important in patients with ST elevation myocardial infarction. We present here a case that suffered from upper gastrointestinal bleeding followed by ST elevation myocardial infarction. It should be noted that recurrent gastrointestinal bleeding did not occur in our case even after the use of heparin, clopidogrel and tirofiban. This may be a result of the concurrent use of a proton-pump inhibitor.

**References**

成功以經皮冠狀動脈介入治療上消化道出血合併心肌梗塞：個案報告

吳孟杰  吳文憲

上消化道出血增加心肌梗塞之危險性，這類病人若是併發急性心肌梗塞則會有較高的死亡率。急性心肌梗塞同時又有消化道出血的病人之治療策略較少被論及。本文提供一個胃潰瘍出血而又併發急性心肌梗塞的個案，病患在上消化道出血後接受內視鏡腎上腺素注射治療止血二天後，發生心肌梗塞，我們成功地以經皮冠狀動脈介入治療來治療急性心肌梗塞。

關鍵詞：上消化道出血，經皮冠狀動脈介入治療，急性心肌梗塞，胃潰瘍

徵稿：97年11月6日  接受刊載：98年2月13日
財團法人奇美醫學中心內科部心臟內科
通訊及抽印本索取：吳文憲醫師  710台南縣永康市中華路901號  奇美醫學中心內科部
電話：(06)2812811轉55907  傳真：(06)2828928
E-mail: mjmail@pchome.com.tw