In some ways, the Ultra-Fit face mask may be a preferable alternative to the football helmet.

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Hepatic Bleeding and Hemorrhagic Shock Following Thrombolytic Therapy in Patients With Acute Myocardial Infarction

To the Editor:

Severe bleeding is the major adverse effect of thrombolytic therapy (TT), though the occurrence of hepatic hematoma (HH) and hemorrhagic shock as results of the aforementioned treatment is very unusual.1,2 Liver hemangioma and hepatic trauma are conditions that can facilitate this complication. To our knowledge, there is only one report (that of Fox et al3) of nontraumatic hepatic bleeding related to TT in a patient with acute myocardial infarction (AMI). We report here two patients with AMI who developed this complication following TT.

Case 1

A 71-year-old woman was admitted to the ICU with an inferior AMI. Her physical examination, and laboratory and coagulation studies were normal. The patient received aspirin, heparin, and rt-PA, 100 mg in 90 min. During the following 12 h, the patient had recurrent episodes of vomiting and abdominal distension, and her blood pressure and hematocrit level progressively dropped. A CT scan revealed a large subcapsular HH (Fig 1) and hemoperitoneum. An angiographic study did not reveal any vascular malformation, and the hepatic artery was embolized. On the second day after admission, she showed clinical data that suggested intra-abdominal rebleeding. A laparotomy was performed and the hepatic artery was bound. The patient died of cardiogenic shock.

Case 2

A 57-year-old man was admitted with an anterior AMI. His physical examination, and laboratory and coagulation studies were normal. He was given anisoylated plasminogen streptokinase-activated complex (APSAC), 30 IU, and aspirin. Twenty-four hours later, the patient complained of abdominal pain and subsequently developed a hypovolemic shock. An abdominal ultrasound study showed the presence of free intra-abdominal liquid. A laparotomy disclosed a large HH and blood in the peritoneal cavity. Because of incoercible hepatic bleeding, liver packing was performed. Hepatic angiography showed no evidence of hepatic hemangioma. The patient gradually improved and was discharged from the hospital.

In previous reports,4,5 liver hemangioma or hepatic trauma were reported as conditions that could have facilitated liver bleeding in patients with TT, but in the cases presented here, there were no liver malformations or hepatic traumas.

In summary, hepatic bleeding caused by TT in patients with AMI is very exceptional but should be investigated in patients with unexplained gastrointestinal symptoms or hypovolemic shock following thrombolysis.

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REFERENCES
1 McLeod DC, Coln WG, Thayer CF, et al. Pharmacoepidemiology of bleeding events after use of r-alteplase or streptokinase in acute myocardial infarction. Ann Pharmacotherapy 1993; 27:956-65
4 Beckers KH, Gortz H. Severe bleeding from a cavernous hemangioma of the liver during treatment with streptokinase. Dtsch Med Wochenschr 1987; 112:1782-84

Cardiopulmonary Effects of Laparoscopic Surgery, Revisited

To the Editor:

In a well-written article, Sharma et al (September 1996)1 reviewed the cardiopulmonary effects of laparoscopy. However, there are two additional studies of respiratory mechanics of interest to your readers.

One study measured airway flow and airway and esophageal pressures of anesthetized/paralyzed, tracheally intubated patients during mechanical ventilation.2 Measurements were made in the

![Figure 1. Abdominal CT scan revealing a large hepatic subcapsular hematoma.](image-url)