

Post-operative myocardial infarction complicating donor hepatectomy: Implications for donor safety

Sir,

A 56-year-old post-menopausal lady was evaluated as a liver donor for her daughter who had fulminant liver failure. Her medical history was unremarkable, and post-menopausal state and age above 50 years were the only associated risks. A 12-lead electrocardiogram and two-dimensional echocardiography were both normal. We identified her as intermediate surgical risk^[1] with clinical cardiopulmonary reserve of six metabolic equivalents. Standard protocols for anaesthesia for hepatectomy were performed; however, an epidural catheter was abandoned in view of technical difficulty and analgesia was provided with an intravenous fentanyl infusion. The procedure lasted for 6.5 h with blood loss of 600 ml and the patient was extubated at the end of procedure. Continuous analgesia was

provided with an intravenous infusion of fentanyl targeting a pain score <4 on the visual analogue scale. On the 1st post-operative day (POD), the patient was pain-free, ambulant and haemodynamically stable. Her heart rate averaged 65/min, central venous pressure 7–8 mmHg, haemoglobin 10.8 g/dL, serum aspartate aminotransferase 684 IU/L, serum alanine aminotransferase 565 IU/L and international normalised ratio (INR) 1.46. On the second POD, the patient developed sudden hypotension with cardiac arrest. There was no evidence of hypovolaemia or bleeding at the surgical site.

Standard cardiopulmonary resuscitation was initiated with successful return of spontaneous circulation after two cycles. The blood pressure was then maintained with infusions of adrenaline and dopamine. A 12-lead electrocardiogram suggested an inferolateral wall ST-elevation myocardial infarction [STEMI, Figure 1]. A coronary angiogram showed 80% stenosis of the distal right coronary artery with normal flow in all other vessels. Percutaneous coronary intervention was performed with a bare metal stent that was exchanged for a covered stent following perforation at the site of stenting. A pigtail catheter was inserted into the

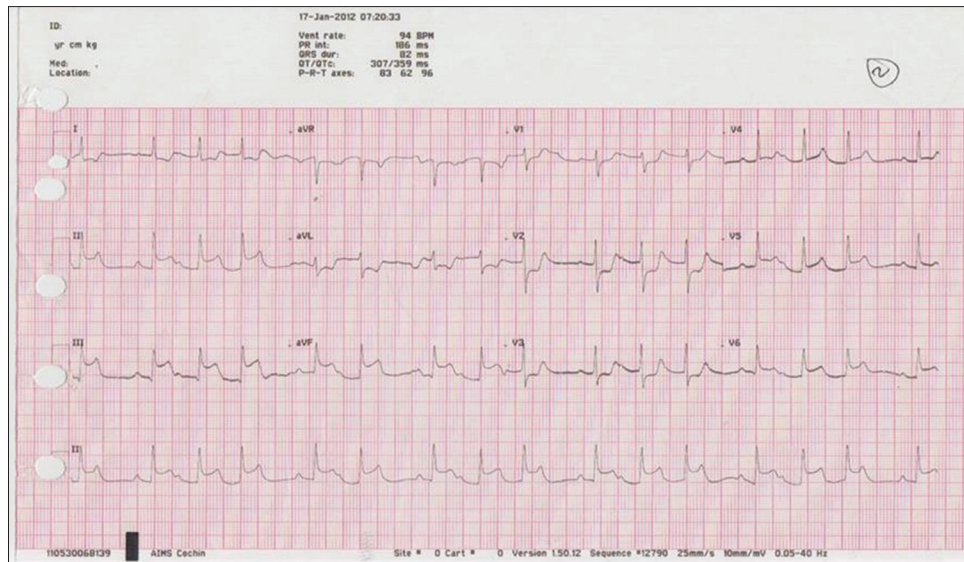


Figure 1: Electrocardiogram showing inferolateral wall ST-elevation myocardial infarction

pericardial sac [Figure 2]. Infusion of eptifibatid and intravenous heparin were administered at the time of intervention. The patient bled 1.8 L from the abdominal drain and 330 ml from the pericardial sac, for which she was transfused two units of packed red blood cells and two units of fresh frozen plasma (INR was 4.23). She was weaned off the ventilator on the 4th day following intervention and was discharged on the 16th POD.

Despite guidelines for donor selection,^[2] emotional factors and donor availability confound the selection in life-threatening situations. Donor deaths range from 0.5% to 2% in right hepatectomy, and myocardial infarction has also been one of the causes.^[3] As history suggested a good cardiopulmonary reserve with a revised cardiac risk index^[1] score of 0.9%, we did not consider the need for stress testing. An exercise stress testing, dobutamine echocardiogram or assessment of anaerobic threshold may have been predictive of major adverse cardiac events (MACE) in this patient.^[1] In contrast to the American College of Cardiology guidelines,^[1] the European Society of Cardiology^[4] guidelines classify liver resection surgery as high surgical risk for MACE.

It is possible that stress of surgery pre-disposed the STEMI following plaque rupture.^[4] Percutaneous intervention was the treatment of choice as surgical revascularisation or thrombolysis is associated with increased bleeding post-operatively.^[1] Although coagulation disturbances are known after major hepatectomy, epidural analgesia is considered acceptable if performed judiciously.^[5]

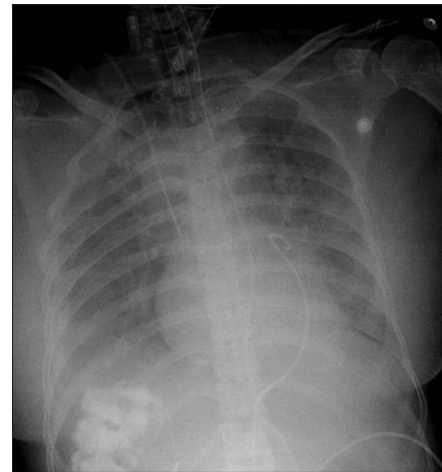


Figure 2: Pigtail catheter in the pericardial sac

Living donation is a viable option for fulminant liver failure, and marginal donors are accepted in the background of restricted donor availability as a life-saving measure. As the donor undergoes surgery that is not indicated for his well-being, rigorous adherence to standard protocols in donor evaluation^[6] even in emergent situations and communication of potential life-threatening complications is necessary for living donor transplants. In the light of our report, exercise stress testing or pharmacological stress testing for prediction of MACE should be considered in high surgical risk procedures including donor hepatectomy.

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Conflicts of interest

There are no conflicts of interest.

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