Gastrointestinal haemorrhage after off-pump coronary artery bypass

Krwawienie z przewodu pokarmowego po operacji pomostowania tętnic wieńcowych bez krążenia pozaustrojowego

Shi-Min Yuan, Amihay Shinfeld, Ehud Raanani

The Chaim Sheba Medical Centre, Tel Hashomer, Israel

Abstract

Gastrointestinal haemorrhage secondary to off-pump coronary artery bypass grafting (OPCABG) surgery is uncommon but lethal. We describe an 83-year-old male patient who developed gastrointestinal haemorrhage after successful off-pump CABG. He received intensive treatment, but further deteriorated following noradrenaline infusion, and subsequently died six days after surgery. Off-pump technique in combination with an extensive calcified arterial system could lead to mesenteric ischaemia accounting for the postoperative gastrointestinal haemorrhage, which might be exacerbated by the use of noradrenaline in this octogenarian patient.

Key words: gastrointestinal haemorrhage, mesenteric ischaemia, noradrenaline, octogenarian, off-pump coronary artery bypass

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Introduction

Postoperative gastrointestinal haemorrhage is uncommon but lethal. Some sporadic cases of it have been described secondary to off-pump coronary artery bypass surgery [1, 2].

Case report

An 83-year-old male patient was referred to this department for coronary artery bypass due to restenosis of coronary stents which were deployed into the diseased left anterior descending and right coronary arteries. The operation was carried out on 21 March 2008. Severe calcification of the ascending aorta and femoral arteries precluded the on-pump coronary artery bypass in terms of arterial cannulation and proximal anastomosis, which had to be rounded off by off--pump technique with a single in situ left internal mammary artery-left anterior descending coronary artery bypass. The operation eventually proved to be successful.

The patient was stable and he was extubated on the first postoperative day. He was uneventful until he complained of an upper abdominal pain and had upper digestive tract haematemesis of about 100 cc of fresh blood on the fourth postoperative day, with an elevated serum lactate of 50 mg/l (normal 8 mg/l) and a decreased haemoglobin of 6 g/dl. Subsequently, he developed cardiogenic shock. Resuscitation was started at once, including intravenous infusion of noradrenaline. He deteriorated quickly in spite of active conservative treatments. He died on the sixth postoperative day.

Discussion

Postoperative gastrointestinal haemorrhage is an uncommon complication in patients after off-pump and on-pump operations, accounting for 1.6% and 1.2%, respectively [3]. Akpinar et al. [4] reported 2 of 126 off--pump patients died of mesenteric ischaemia early after off-pump operation. Gomes et al. [5] noted that the off--pump patients needed aggressive vasoactive drug support for haemodynamic stabilisation and all of them developed complications. These patients also had a tendency to require administration of blood and blood derivatives due to diffuse and oozing type bleeding.

In a comprehensive review, causes of mesenteric ischaemia were meticulously assessed from non-occlusive to occlusive disorders including non-pulsatile cardiopulmonary bypass. Inotropic drugs such as vasopressin, adrenaline, noradrenaline and antihypertensive drugs, diuretics, neuroleptics, and antidepressants, were regarded as potential risk factors that predispose to the occurrence of mesenteric ischaemia [6]. Fiore et al. [7] noted that off-pump

Address for correspondence:
Shi-Min Yuan MD, The Chaim Sheba Medical Centre, Tel Hashomer 52621, Israel, tel.: +972 3 530 27 10; fax: +972 3 530 24 10, e-mail: shi_min_yuan@yahoo.com

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operation caused a significant decrease of the blood flow of the superior mesenteric artery during heart displacement followed by a hyperaemic response at the end of the surgery. Transient hypoperfusion may induce mesenteric ischaemia, responsible for gastrointestinal complications after off-pump operation. Some studies have shown that complement was markedly activated in the on-pump group as indicated by a significant increase in C3bc and SC5b-9, whereas no complement activation was seen in the off-pump group [8]. Off-pump surgery may place patients at higher risk of postoperative hypercoagulability [9].

Conclusion

Off-pump technique in the presence of extensively calcified arterial system led to mesenteric ischaemia accounting for the postoperative gastrointestinal haemorrhage, which might have been exacerbated by the use of noradrenaline in our octogenarian patient. Caution should be taken in high-risk patients in terms of off-pump technique and the use of inotropic agents.

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