

# Perianesthetic Management Of A Geriatric Obese Patient With Aortic Thrombosis Undergoing Major Hepatobiliary Surgery

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## Abstract

Age-related diseases like hypertension and diabetes as well as smoking are the etiologic factors for aortic plaque formation and thromboembolism in geriatric patients. Aortic plaques in atherosclerosis were associated with increased risk of stroke, myocardial infarction and thromboembolism. We report a case of a geriatric obese patient with thrombosis of arcus and descending aorta undergoing major hepatobiliary surgery. Remifentanyl-propofol based anaesthesia and low molecular weight heparin was used for rapid recovery and prevention of cerebral thromboembolism.

## INTRODUCTION

Geriatric patients still have the highest perioperative mortality and morbidity rate in the adult surgical population, mainly because of a high prevalence of increased aging related diseases (1). Turet et al. (2) reported that the number of the coexisting diseases was a more important determining factor than chronological age. Obesity, which is defined as body mass index (BMI) $>30 \text{ kg.m}^{-2}$ , is associated with increased mortality-morbidity because of the related diseases like hypertension, coronary artery disease, cerebrovascular disease and deep venous thrombosis. In this case report, we present the anesthetic management of a geriatric, obese patient with thrombosis of arcus and descending aorta undergoing major hepatobiliary surgery.

## CASE REPORT

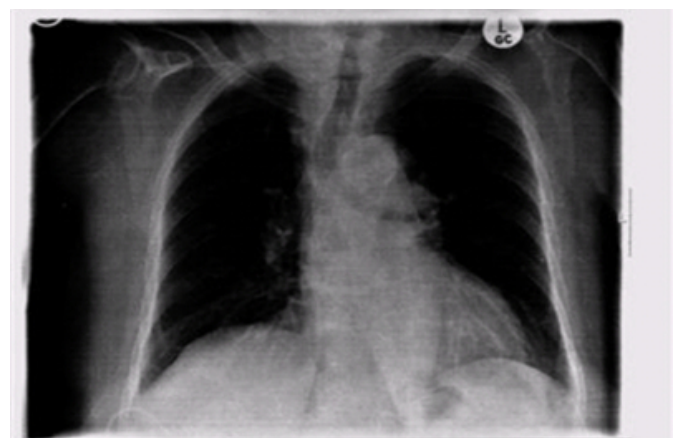
A 82-year-old obese (BMI:32  $\text{kg.m}^{-2}$ ) woman was scheduled for hepatic resection because of type-3b gallbladder tumor with a total bilirubin of  $16 \text{ mg.dl}^{-1}$ . In her medical history, the patient was hypertensive and had a previous anterior myocardial infarction. She was bedridden and had right hemiparesia (4/5) with mild motor aphasia as a sequel of cerebral vascular accident. She had no angina pectoris symptoms at present and her hypertension was regulated (arterial blood pressure:140/80 mmHg; heart rate: 80  $\text{beats.min}^{-1}$ ). She was on a medical treatment of pentoxifylline (400mg/day/PO), simvastatin (20mg/day/PO)

and amlodipine (5mg/day/PO).

The preanesthetic evaluation chest radiograph revealed a calcification in the aortic knob, a dilatation both at the ascending and descending aorta and an extreme right deviation of trachea (Fig.1).

## Figure 1

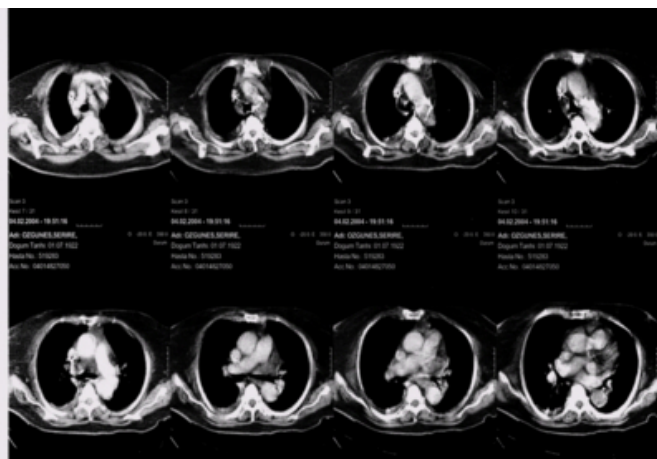
Figure 1: The preoperative chest radiograph (calcification in the aortic knob, dilatation both at the ascending and descending aorta and right deviation of trachea are seen)



Thorax CT showed a thrombus originated from medial wall of arcus aorta which had a luminal protrusion of 2 cm in addition to a thrombus in the descending aorta (Fig 2).

**Figure 2**

Figure 2: The preoperative thorax CT(thrombus originated from medial wall of arcus aorta which had a luminal protrusion of 2 cm in addition to a thrombus in the descending aorta are seen)



In her echocardiography; ejection fraction of 40 %, 2° mitral regurgitation, mild aortic regurgitation and left ventricular dyskinesia were found. According to a cardiovascular surgery consultation, prophylactic treatment with low molecular weight heparin (LMWH, Enoxaparin 0.6mg/day/SC) and respiratory physical therapy were begun four days before the operation.

The patient was premedicated with diazepam (2mg/PO) on the operation night. On anesthesia induction after standart monitorization, an infusion of remifentanil 0.025µg.kg<sup>-1</sup>.min<sup>-1</sup> was started one minute after, anesthesia was induced with propofol 1 mg. kg<sup>-1</sup>. Tracheal intubation was facilitated with vecuronium 0.1mg.kg<sup>-1</sup> without gross hemodynamic instability (Table 1). Anaesthesia was maintained with remifentanil 0.025-0.0125 µg.kg<sup>-1</sup>.min<sup>-1</sup>, propofol 3-6 mg.kg<sup>-1</sup> hr<sup>-1</sup> and 50% oxygen in air. Neuromuscular blocking was supported with repeated vecuronium bolus doses if necessary. After anesthesia induction, arterial and central venous catheters were placed for continuous monitoring of systemic blood pressure (IBP) and central venous pressure (CVP) intraoperatively and the lower extremities were wrapped with elastic bandages for the prophylaxis of deep venous thrombosis.

**Figure 3**

Table 1: Systolic, diastolic and mean arterial pressure (SAP, DAP and MAP) and heart rate (HR) before and after induction of anaesthesia (Ind) and at 1, 5, 10 minute after tracheal intubation (Int)

	Before Ind	After Ind	Int+1 min	Int+5min	Int+10min
SAP/DAP/MAP (mmHg)	132/52/82	98/77/84	138/74/9 5	153/67/9 3	134/55/8 2
HR (min <sup>-1</sup> )	97	71	101	89	83

Intraoperative mean arterial pressure did not decrease to less than 70 mmHg during the operation. In order to keep the patient's systolic arterial pressure below 160 mmHg glycerin trinitrate 0.5-2 µg.kg<sup>-1</sup>.min<sup>-1</sup> was infused. Perioperative fluid replacement was adjusted in order to keep CVP between (+4) and (+6) cmH<sub>2</sub>O and one unit of whole blood transfusion was made during the operation. 4-5 hepatic segmentectomy with cholecystectomy and external bile ducts excision with hepaticojejunostomy was performed in the operation that lasted for nine hours. Lornoxicam 8 mg and meperidine 0.2 mg.kg<sup>-1</sup> were administered intravenously intraoperatively for postoperative pain. When the patient gained adequate neuromuscular function and became conscious, the trachea was extubated after antagonization of neuromuscular blocking without gross hemodynamic instability (Table2).

**Figure 4**

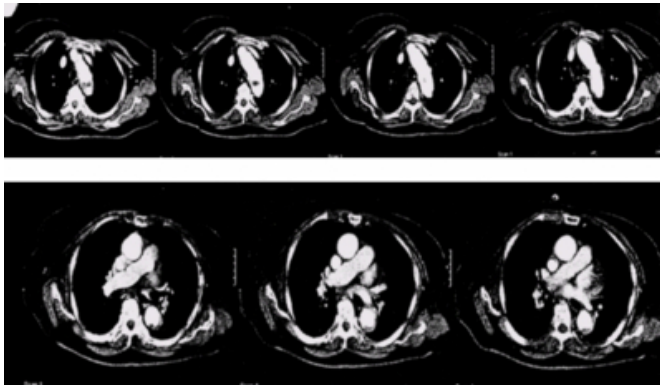
Table 2: Systolic, diastolic and mean arterial pressure (SAP, DAP and MAP) and heart rate (HR) after 1, 5, 10, 15 minute after tracheal extubation (Ext)

	Ext+1 min	Ext+5min	Ext+10min	Ext+15min
SAP/DAP/MAP (mmHg)	160/65/96	175/80/112	168/57/94	148/56/86
HR (min <sup>-1</sup> )	93	108	102	102

The patient transferred to the intensive care unit and immediate postoperative pain score (verbal rating scale) was 0 which remained similar till to the postoperative 19<sup>th</sup> hour. IV lornoxicam 8 mg was repeated at the postoperative 8<sup>th</sup> hour and no other analgesic medication was required. The patient was discharged to the ward after 19 hours without any new neurologic complication. Prophylactic treatment with LMWH was given for seven days after the operation. At the postoperative 7<sup>th</sup> day, the control thorax CT (Fig 3) was repeated and no additional difference was found in the diameters of the aortic thrombi. The patient was discharged from hospital without problem at the postoperative 36<sup>th</sup> day.

**Figure 5**

Figure 3: The postoperative control thorax CT ( There is no difference in the configurations of the aortic thrombi between pre and postoperative thorax CT)



**DISCUSSION**

We present an uneventful anesthetic management of a geriatric obese case with thrombosis of aorta undergoing major hepatobiliary surgery. Aging related diseases like hypertension and diabetes as well as smoking are the etiologic factors for aortic plaque formation and thromboembolism in geriatric patients (3). In literature it was reported that aortic plaques in atherosclerosis were associated with increased risk of stroke, myocardial infarction and thromboembolism (3,4). In the presence of the unexplained ischaemic stroke and peripheral emboli, the thrombosis of the aortic arch should be suspected. Morau et al. (5) reported a case of sudden death due to thromboembolic event originated from aortic thrombosis.

Aortic thrombi detected in preanaesthetic evaluation were found noticeable in our case who had high risk factors for postoperative mortality and cerebral-pulmonary thromboembolism (3,6). Thus we preferred to use short acting anaesthetic agents like propofol and remifentanyl for rapid recovery and preventing hypertensive responses (1,6,7,8,9). In order to decrease the risk of cerebral thromboembolism, we administered intravenous glycerin trinitrate infusion to keep systolic blood pressure < 160 mmHg (3).

Aging affects the pharmacokinetics and pharmacodynamics of all drugs so that adjustment in drug dosing must be done in elderly patients. Although there aren't sufficient studies with remifentanyl about the ideal dose in geriatric patients (10,11,12), we administered the minimized dose which Greilich et al.(13) had used for sedation without perioperative awareness according to the postoperative inquiry. In elderly patients, although influence of type of anaesthesia on

perioperative mortality and morbidity was not shown exactly in literature, the supporting data for regional anaesthesia is more frequent (6). But in our case, we didn't prefer epidural technique because of the warnings of some researchers about postoperative coagulation problems in hepatic surgery (14).

The administration of IV meperidine 0.2 mg. kg<sup>-1</sup> intraoperatively which was less than the suggested doses in literature (15) and a total dose of IV lornoxicam 16 mg had been adequate for postoperative analgesia which gave us advantage for early postoperative mobilization. According to the suggestions in literature (16) we administered LMWH, wrapped lower extremities with elastic bandages and began to apply respiratory physical therapy preoperatively for the prophylaxis of thromboembolism and pulmonary complications.

**CONCLUSIONS**

In conclusion, aortic thrombosis should be suspected in high risked geriatric patients with a history of stroke and prophylactic management should be begun preoperatively. We think that low dose remifentanyl-propofol based anaesthesia for rapid recovery combined with prophylactic approach for thromboembolism is a suitable choice for a geriatric patient with many risk factors like our case.

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