How I couldn't avoid intraoperative massive transfusion in a patient with Multiple Myeloma?

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Background and goals:

The incidence of Multiple Myeloma (MM) is about 1% of all malignancies and 15% of hematologic malignancies (1). There are several difficulties during the intraoperative management for patients with MM. Malignant hematological disorders and thrombosis may be an issue. As immunomodulation may occur with allogeneic transfusion, the use of cell saver is a source of major controversy (2). Tranexamic acid has been reported to be used safely in recent years without increasing the risk of venous thromboembolism (3). In this case report, we aimed to report massive bleeding management of a patient undergoing lumbar instrumentation, vertebroplasty and 2-level laminectomy between T1-T10 due to multiple myeloma masses on thoracic vertebrae T2-T3.

Case Report:

A 69 year old male patient had been diagnosed with MM 1 year ago and received chemo-radiotherapy as primary radical treatment. The patient had a history of hypertension, inguinal hernia repair and vertebroplasty. The patient's functional capacity was poor (4 MET) with stable angina pectoris. The electrocardiogram showed ST-segment depression in leads D2, D3, and AVF. He had normal global left ventricular function with an EF of 57%. He had also an *ascending aortic aneurysm* measuring 4.8 cm. In myocardial perfusion SPECT there was a mild perfusion defect in the inferolateral wall. The left anterior descending coronary artery (LAD) had a 30% stenosis in the mid portion. His Htc level was 29.6%, Hg was 11.2 g/dL and Platelet count was 76000/mL. Thrombocytopenia occurred due to bone marrow infiltration in preoperative period. He had a vertebral compression fracture because of the MM mass at the level of thoracic spine T2-T3. He had posterior laminectomy and instrumentation T1-T10. His all hemodynamic variables were stable during the surgical procedure.

Figure 1: perioperative assessment of coagulation using thromboelastogram monitoring

TEST ADI	SONUÇ	BİRİM	REFERANS ARALIĞI
Lab. Kabul Zamanı:			
Hematoloji			
TROMBOELESTOGRAM (CK), Heparinsiz			
Factor Deficiency/Hemodilution			
R	10,4	min	2,50 - 7,50 min
K	3,7	min	0,80 - 2,80 min
Angle	61,6	deg	55,20 - 78,40 deg
MA	58,5	min	50,60 - 69,40 min
TROMBOELESTOGRAM (CK), Heparinsiz			

Isolyte S was administered at 6 mL/kg/h iv for the fluid maintenance. 1 g tranexamic acid was administered by slow iv injection and then iv infusion was started with a dose of 1 mg/kg/h. When the bleeding amount reached to 1800 cc 2 packed RBCs and 1000 cc gelatin were given. Then the Htc was 23.8%, Platelet was 60000/mL, fibrinogen was 122 mg/dL and INR was 1.65. The thromboelastogram analysis showed a high R (10.4 min) and K levels (3.7 min) with a normal angle degree and MA (58.5 min) (Figure 1). At the end of surgery the duration was 8 hours, total bleeding reached to 6 L. We transfused 10U of RBCs, 8P of FFPs and 2 apheresis of platelet. Final Htc was 26.5%, PT:14.7 s, PTT:39.7 s, INR:1.24, Platelet:90000/mL, fibrinogen:164 mg/dL and CVP:5 in supine position.

Discussion and Conclusion:

Preoperative thrombocytopenia was one the main factors that could increase bleeding. On the other hand, using a cell saver was not possible in this MM case; thereby 25mg/kg IV bolus dose of TXA was administered to the patient at the beginning of operation. Our purpose of this was to prevent more increase in bleeding by using an anti fibrinolytic agent, as well as averting loss of coagulation factors due to bleeding.

We administered tranexamic acid at the beginning of the surgery to reduce heavy bleeding. Therefore we restricted the loss of coagulation factors. We couldn't avoid massive transfusion however disseminated intravascular coagulopathy didn't occur. If this patient got an IV iron therapy from the beginning of the preoperative period, we consider that his perioperative bleeding could be limited.

In the reported case we have demonstrated that optimizing coagulation through goal directed use of blood products can reduce bleeding and using unnecessary blood products.

References:

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