Bleeding Diathesis in Multiple Myeloma: A Rare Presentation with Management Nightmare

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Introduction:

Multiple myeloma is a plasma cell dyscrasias with a presence of excess monoclonal paraprotein resulted from the abnormal proliferation of monoclonal plasma cells in the bone marrow [1]. This was first described in 1848, represents 1% of all malignancies worldwide and is the 14th most common cause of cancer deaths in the United States [2]. Abnormal coagulation profile though commonly seen in multiple myeloma, can rarely manifest as life-threatening hemorrhagic complications.

Case:

A 61-year-old female with a PMH of HTN, CAD, status post PCI presented to the emergency room with generalized weakness and dizziness for a day. On initial encounter, her temperature was 99.8 F, RR of 18 breaths/min, HR of 115 bpm, BP of 77/33 mm Hg. Initial lab work revealed Hemoglobin of 5.5 g/dL (13.5-17.5 g/dL) which dropped to 3.6 g/dL in 6 hours, platelets of 142k (150k-450k). CT of the chest revealed a large hematoma in right breast which was initially thought to be a likely source of bleeding. The patient had a central line placed due to inability to access a peripheral site. She was transferred to the medical ICU where she remained unstable even after immediate fluid resuscitation and massive transfusion protocol. She received vitamin K, B12 therapy, folic acid therapy, DDAVP to address uremic platelet dysfunction, antifibrinolytic (Amicar) infusion and intravenous dexamethasone to address acquired dysfibrinogenemia after which her bleeding finally stopped.

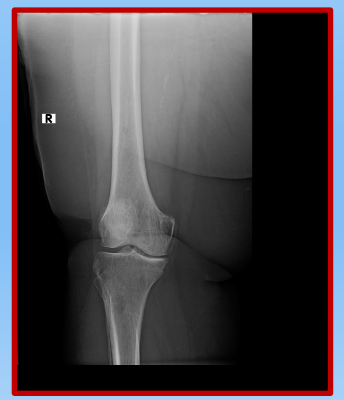

Figure 1: Long bone (femur and tibia) showing lytic lesions.

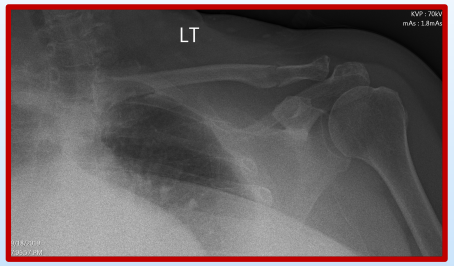

Figure 2: X-ray showing clavicular fracture

Case (cont.):

She was found to have M-spike on protein electrophoresis, hypercalcemia, and lytic lesions of her long bone shafts on the skeletal survey (Figure 1). Her chest X-ray revealed a non-displaced fracture of her left clavicle (Figure 2). A new CT scan showed subtle lytic lesions involving the anterior aspect of her second left rib. It also showed paravertebral soft tissue mass at the T6-T7 level with destruction of part of the T6 vertebral body (Figure 3). Further immunohistochemical analysis of bone marrow biopsy showed 60-70% of CD138 positive and lambda light chains expressing plasma cells confirming the diagnosis of multiple myeloma. The coagulopathy was controlled when she was started on chemotherapy for multiple myeloma. On follow up her fibrinogen was markedly improved to 244(200-400 mg/dl).

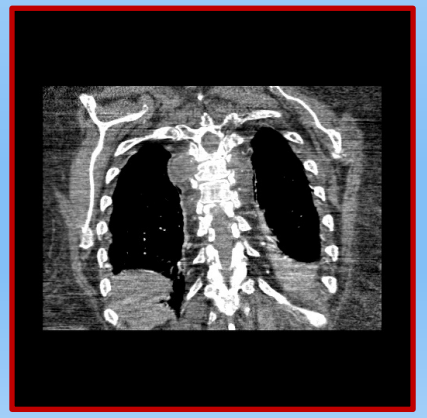

Figure 3: Paravertebral soft tissue mass at T6-T7 level.

Discussion/Conclusion:

Various somatic, oncogenic mutations and chromosomal aberrations are associated with the mutation of plasma cells causing progression to MM. Abnormal coagulation tests are commonly seen in plasma cell dyscrasias. However, clinically significant bleeding complications are rarely seen. Bleeding tendencies in multiple myeloma can be explained by a variety of mechanisms such as dysfibrinogenemia secondary to inhibition of fibrin monomers by the FAB portion of paraprotein molecules, paraprotein induced platelet dysfunction, shortened platelet survival, damage to vascular endothelium, and acquired von-Willebrand syndrome [3]. In our patient, the pathology behind bleeding diathesis is thought to be acquired dysfibrinogenemia with the evidence of prolonged prothrombin time and decreased fibrinogen activity. Treatment therapies which can be used for symptomatic management of bleeding complications include coagulation factor replacement, fibrinolysis inhibitors, protamine sulfate, Arginine, Vasopressin, and platelet factor 4. Plasma exchange and splenectomy can be tried in refractory cases [8]. The mainstay of treatment is always treating the underlying disease. Our patient received symptomatic treatment including massive transfusion protocol with PRBC's, coagulation factor replacement, vitamin K and folic acid therapy. Her condition temporarily stabilized with the transfusion of antifibrinolytic (Amicar) targeting acquired dysfibrinogenemia. However, coagulopathy was controlled only when the patient was started on chemotherapy for multiple myeloma.

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