Hypercalcemia of Malignancy in a Newborn with Infantile Fibrosarcoma

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CASE REPORT
A newborn full-term female was noted to have a large, left-arm, soft-tissue mass on prenatal ultrasound. She had significant blood loss from the mass at birth, resulting in hypotension. Magnetic resonance imaging on day of life (DOL) 2 revealed a 9.2 by 7.5 by 8.9 cm heterogeneous solid mass with multiple vessels throughout, along with areas of hemorrhage and necrosis [Figure 1, Panel A]. The mass caused significant remodeling of the ulna and apparent displacement of the neurovascular bundle. Biopsy showed morphology consistent with infantile fibrosarcoma: spindle and plump cells with significant mitotic activity and a vascular pattern similar to a hemangiopericytoma [Figure 1, Panel B].

Flourecence in situ hybridization (FISH) showed ETV6 (Tel; 12p13) rearrangement, confirming the diagnosis of infantile fibrosarcoma.

As a consequence of the blood loss at delivery the infant developed acute kidney injury, with a peak creatinine level of 376 mmol/L (4.25 mg/dL) on DOL 5. Acute liver injury also developed and transaminases rose with the peak aspartate aminotransferase of 519 IU/L and alanine transaminase of 395 IU/L on DOL 4.

Hypercalcemia was initially noted on DOL 6, with total calcium level (corrected for albumin) of 3.25 mmol/L (13 mg/dL), reference range 1.9–2.6 mmol/L (13 mg/dL). Hypercalcemia persisted with a peak calcium level of 4.2 mmol/L (16.9 mg/dL) on DOL 13. Parathyroid hormone (PTH) and 1.25 dihydroxyvitamin D levels were undetectable. The parathyroid-hormone related protein (PTHrP) level was 654 ng/L (reference range 14-27 ng/L). Treatment with normal saline and furosemide led to minimal improvement of the hypercalcemia.

An erythematous area with firm white-yellow papules on the ankle was noted on DOL 22 [Figure 2] at a prior intravenous catheter site.

Figure 2. Subcutaneous calcinosis (black arrow) developed on the ankle, at a prior intravenous catheter site.
catheter site. The lesion was consistent with subcutaneous calcinosis. On DOL 22 the infant was started on chemotherapy with vincristine, dactinomycin and cyclophosphamide. The calcium normalized 3 days after initiation of chemotherapy. Hypercalcemia did not recur and the repeat PTHrP level on DOL 43 was 118 ng/L.

The infant underwent several debridements of the tumor over the following months, and the tumor was resected at 5 months of age. She received a total of 8 cycles of chemotherapy and completed chemotherapy at age 7 months. As of age 20 months, she is in remission. The subcutaneous calcinosis on the ankle resolved.

DISCUSSION

Infantile fibrosarcoma is a rare tumor that can secrete PTHrP. PTHrP secretion led to hypercalcemia and subsequent subcutaneous calcium deposition in our patient. There are very few case reports detailing the hypercalcemia in infantile fibrosarcoma and the response to chemotherapy. We found that while the hypercalcemia was refractory to hydration with intravenous fluids and furosemide, chemotherapy led to rapid resolution of the hypercalcemia and reduction of the serum PTHrP level.

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Reference


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