MYSTERY DIAGNOSIS: Erdheim Chester Disease

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Background

Erdheim Chester Disease (ECD) was first described by Erdheim and Chester in 1930. Since then, fewer than 1000 cases have been reported in the medical literature. ECD is most common in adult men, with a mean age of 50 to 60 years at diagnosis; the male predominance is estimated to be 3:1. Rare pediatric cases (<15 years of age) have been reported. In 95% of all ECD patients there is involvement of the long bone. ECD has been seen to effect other organ systems as well such as the maxillary sinus, large vessels, and retroperitoneum (59 percent each), heart (57 percent), Lungs (46 percent), Central nervous system (41 percent), Skin (27 percent), Pituitary gland and orbit (22 percent each). Symptoms may vary from patient to patient.

Case Report

A 60 y/o female, presented to the clinic with anterior compartment leg pain bilaterally. For the past 4 months, she complained of progressive swelling of her anterior legs bilaterally accompanied by noticeable deformities. Patient also developed increased fat deposition around her eyes.

Initially, she was sent for bilateral lower extremity x-rays. X-rays revealed symmetrical hardening and thickening, mainly in the metaphysis and diaphysis. Five days after the original presentation, the patient was referred to GI because of development of diarrhea, abdominal pain, and weight loss. A CT of the abdomen was done which showed no abnormalities. Colonoscopy was subsequently done which showed no masses or inflammatory processes. Ten days later, the patient's xanthomas continued to increase in size around her eyes. Patient was sent to Hematology and Oncology where genetic testing and biopsy of the xanthomas were done.

Imaging

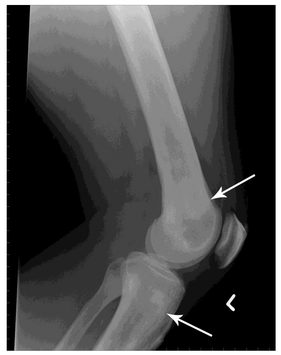

Figure 1. Within the distal femur and proximal tibia is a diffuse symmetric diametaphyseal process showing mixed sclerosis (arrows) and slight lucency.[3]

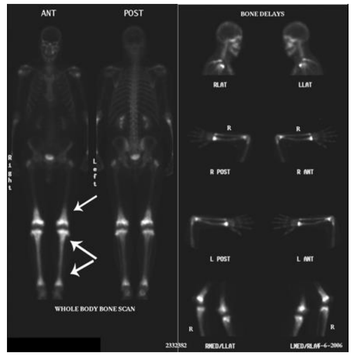

Figure 2. Delayed image in a whole-body bone scan shows intense increased uptake in a bilateral symmetric distribution involving the metadiaphyseal regions of the tibias and femur (arrows). To a lesser extent, similar findings are noted in the forearms.[3]

Histology

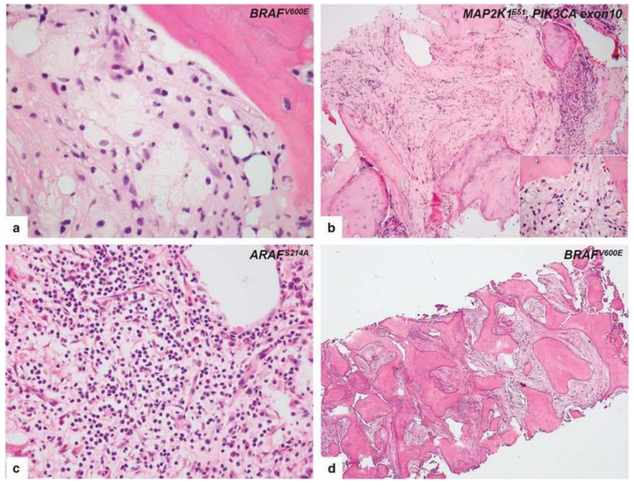

Figure 3. Histopathologic features of intraosseous Erdheim-Chester disease. (**a**) BRAFV600E mutation, with mild fibrotic background reveals the classical morphology of Erdheim-Chester disease involvement. Lipid-laden histiocytes tended to form loose clusters with scant inflammatory cells. (**b**) In a case, a prominent fibrotic background obscured the morphology,(**c**) areas of dense lymphoplasmacytic infiltrate whose presence may prompt the diagnostic consideration of osteomyelitis or Rosai-Dorfman disease. **(d)** Femur biopsy of a prominent fibrosis and osteosclerosis. *BRAF*V600E mutation is detected in that specimen.[4]

Discussion

Biopsy taken from the patient showed lipid-laden, "foamy" histiocytes. From the various mutations such as ARM, and MAP2K, our patient had a BRAF V600E mutation. Patient was initiated on vemurafenib 480 mg twice daily by Hematology and Oncology. There is no complete guideline when choosing therapy. All treatments are based on genetic testing and responsiveness of symptom relief. Treatment is continued until progression of disease or severe adverse effects are noted.

Conclusion

Gastroenterological symptoms improved with antibody therapy as well probiotic supplementation. Orthopedic intervention was not recommended. Patient's care was transferred to Hematology - Oncology for long term management. Bi-Annual follow-ups with GI and orthopedic surgery was recommended for close monitoring of symptoms and deformity progression. This case of anterior lower extremity pain in otherwise healthy adult patients, shows us the importance to elicit a full history.

References

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