Otolaryngologic Presentation of Multifocal Non-Langerhans Cell Histiocytosis

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Introduction

- Non-Langerhans Cell Histiocytosis (non-LCH) is a classification of proliferation of histiocytes that cannot be characterized as Langerhans cells (CD1a+/Langerin+/S100+).[1]
- Non-LCH encompasses a spectrum of diagnoses that are differentiated by the locations effected by the disease process:[1]
  - Predominate cutaneous involvement
  - Skin involvement with a major systemic component ***(present in this case)***
  - Predominant extracutaneous involvement
- The presentations each histiocytosis can vary widely, even when comparing diagnoses within one of these specific subgroups.
- The primary histiocyte cells in each specific type of histiocytosis are identified using immunohistochemical markers. Although pathogenesis of these conditions is not fully understood.

Case Presentation

- **A 6-year-old previously healthy female presented with a 2-year history of bilateral proptosis, progressively worsening on the left with acute redness and tearing.**
- No associated pain, itchiness, or visual impairment. Denied fevers, chills, night sweats, weight or appetite changes.
- Physical exam positive for bilateral proptosis L>R, inability to close left eye, and a full abdomen. Eyes were non-tender
- Laboratory results significant for Total Bilirubin 1.5, AST 59, and LDH 1094.

Case History

- Emergency department CT of the orbits to assess for optic glioma, showed **bilaterally enlarged optic nerves, bilateral proptosis L>R, and a left maxillary sinus mucous retention cyst.**
- MRI of the orbits, face, and neck w/wo contrast shows **infiltrative soft tissue mass in neck, extending to bilateral maxillary sinuses and orbits L>R with displacement of optic nerves** (**Figure 1**).

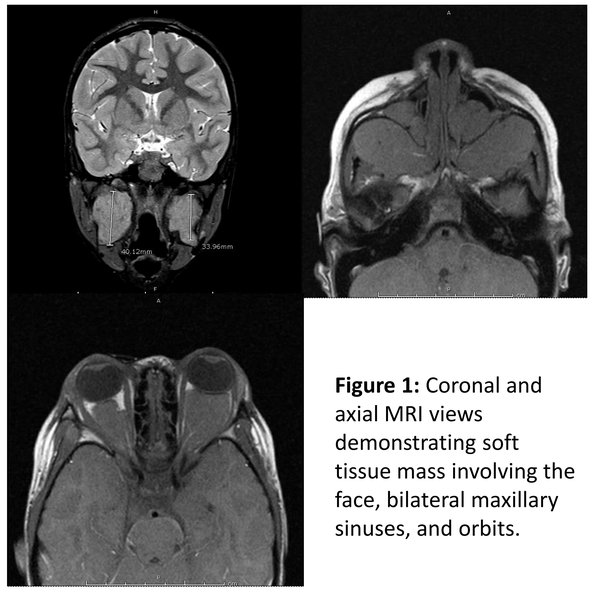

Figure 1: Coronal and axial MRI views demonstrating soft tissue mass involving the face, bilateral maxillary sinuses, and orbits.

- Left maxillary biopsy **(Figure 2)** taken via functional endoscopic sinus surgery. Pathology via Mayo Clinic shows **scattered histiocytes with rare emperipolesis and immunochemical staining positive for CD163, CD68, S100, Factor 13A (weak), cyclin D1, and OCT2. Notably negative for Langerin, CD1a, and BRAF-V600E.**
- Staging CT redemonstrated known masses and **revealed bilateral renal hila soft tissues masses, soft tissue density and obliteration of lower lumbar CSF spaces with thickening of sacral nerve roots, pelvic lymphadenopathy, and soft tissue density draping along bilateral pelvic sidewalls.**

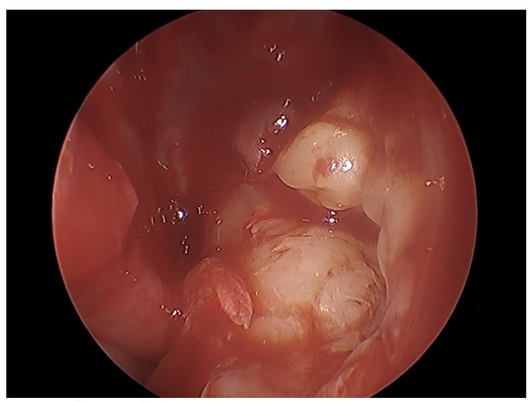

Figure 2: Left maxillary soft tissue mass, biopsied via endoscopy.

- CTL spine MRI showed **mass surrounding L4 and L5 with extension into all sacral neural foramina, surrounding all exiting nerve roots (Figure 3).** The mass is similar in signal intensity with the rest of the discovered soft tissue masses.

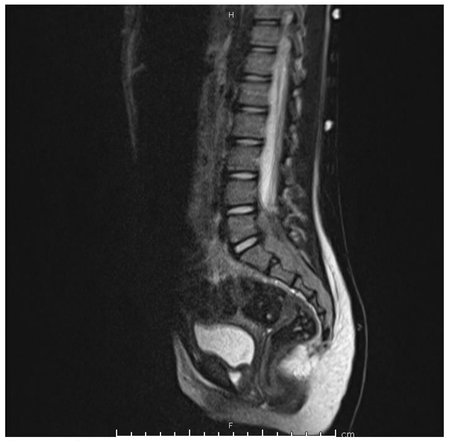

Figure 3: Sagittal MRI showing L spine and sacral spinal canal involvement.

- Cardiac MRI showed no evidence of cardiac involvement.
- NF1 genetic testing resulted negative.
- Repeat brain and orbit MRI shows mild decrease in size of masses within bilateral maxillary sinuses. Masses within the neck, face, and orbits are stable in size.

Diagnosis and Management

- Given the pathology and radiologic findings a diagnosis of a non-LCH was made, however the exact type is difficult to ascertain.
- Regardless of specific diagnosis, the multifocal nature of the disease process and ophthalmic involvement dictates need for systemic chemotherapy, **Clofarabine dosed 25mg/m^2.**
- Current regimen is **six 5-day cycles q28 days**.
- Only significant new symptoms throughout course has been an isolated episode of palpitations, Echo, EKG, and cardiac MRI all within normal limits.
- The patient is on **PJP prophylaxis with Bactrim and receives Neulasta** at the completion of each treatment cycle secondary.

Discussion

- Non-LCH diseases are defined by their immunochemical signature and typically follow a documented pattern of involvement. This case is unique as its features are shared between two histiocytosis processes.
  - Head, neck, and orbital masses that are S100+, CD1a-, and Langerin-, occurring in children is characteristic of extranodal Rosai-Dorfman disease.[2]
  - Bilateral renal and significant non-head and neck involvement is more suggestive of Erdheim-Chester disease. However, this patient is missing symmetric long bone lesions that are often seen and is significantly younger than normal presentation.[3]
- Erdheim-Chester disease and Rosai-Dorfman disease share some common features and have been seen concomitantly in a small number of cases, however, this is typically seen in older adult patients.[4] Highlighting the unique presentation of this patient's case.
- Treatment for non-LCH varies based on the site(s) involved and degree of involvement, ranging from simple resection to systemic chemotherapy when disease is disseminated and high-risk organs are involved, as seen in the present case.

References

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