Castleman Disease Presenting as a Neck Mass in the Pediatric Patient: A Case Series

Ryan Stephenson DO, Paul Papajohn DO, Ryan Triglia MS, Helen Lesser DO, Alexander Manteghi DO
St. Christopher's Hospital for Children and Philadelphia College of Osteopathic Medicine
Philadelphia, Pennsylvania

INTRODUCTION

Castleman disease (CD), or giant lymph node hyperplasia, is a lymphoproliferative disease characterized by unicentric or multicentric enlargement of lymph nodes that share a spectrum of defining histopathologic features. The diagnosis of CD is typically made by excisional biopsy demonstrating the characteristic hyaline vascular and/or plasma cell morphology. CD of the head and neck region in pediatric patient is rare with only 33 previously reported cases in literature. This case series will examine 4 cases of Castleman Disease presenting as a neck mass in the pediatric patient at a single institution, including the youngest pediatric cervical case of CD presented in literature.

CASE 1

A 3-year-old male presented for evaluation of a left posterior neck mass that was present for greater than three months. The mass was nontender and had no correlation recent infection. History did not reveal any systemic symptoms. On examination the patient was noted to have a left posterior neck mass which was firm, nontender, and mobile, measuring grossly 1.5 cm. The patient was also noted to have adenotonsillar hypertrophy. Computed tomography (CT) of the neck with contrast demonstrated bilateral posterior triangle lymphadenopathy, adenoidal hypertrophy, and palatine tonsil hypertrophy. Laboratory workup including CBC, CMP, HIV, EBV IGM, HTLV, CMV, and immunoglobulin levels, was unremarkable. Given concern for malignant process, the patient was taken to the operating room and underwent adenotonsillectomy and fine-needle aspiration (FNA) of the neck mass. FNA pathology revealed abnormal cells but was non-diagnostic, and the tonsils returned as reactive hyperplasia. The patient was noted to have persistent cervical lymphadenopathy two months after tonsillectomy. The decision was made to return to the OR for excisional biopsy of the left posterior neck mass. Final pathology revealed a 1.5 x 1.0 x 0.5 cm lymph node showing increased underdeveloped germinal centers, associated with increase of interfollicular blood vessels consistent with a diagnosis of CD-hyaline vascular type. Immunohistochemistry (IHC) was performed and revealed prominence of interfollicular vessels demonstrated by immunoreactivity to Factor VIII and CD34. Flow cytometry did not reveal immunophenotypically abnormal cell populations. HHV 8 PCR testing was not performed.

CASE 2

A 19-year-old female presented with a large left sided neck mass present for several years. The mass was nontender but had progressively enlarged over its course. Per the patient, she had previously had an incisional biopsy at an outside institution, but records were not available at the time of examination. Review of symptoms revealed no fevers, malaise, night sweats, or weight loss. On examination the patient was noted to have a large left submandibular neck mass which was firm, nontender, mobile, and with no overlying skin changes. FNA of the neck mass revealed lymphoid tissue but was non-diagnostic. No laboratory workup was performed. CT imaging of the neck with contrast revealed a large enhancing solid mass in the left submandibular region measuring 4.7 x 4.4 x 6.6 cm with displacement of the sternocleidomastoid muscle laterally and displacement of the jugular vein and carotid medially. Additionally there were multiple left supraclavicular and deep cervical chain lymph nodes, measuring up to 2.6 x 2.0 cm. The patient was taken to the operating room for excision of the left neck mass. Final pathology revealed benign reactive lymphoid tissue with increased number of germinal centers of varying size with hyalinized vasculature measuring 9.1 x 5.1 x 1.9 cm consistent with CD - hyaline vascular type. Flow cytometry showed no immunophenotypically abnormal cell populations. HHV 8 PCR testing was not performed.

CASE 3

A 13-year-old boy who presented to our department for evaluation of a progressively enlarging left neck mass for the past two months. The parents reported that the mass enlarged following an upper respiratory infection. Review of symptoms revealed no systemic symptoms. An ultrasound was obtained prior to our assessment which demonstrated a single large left neck mass that measured 1.6 x 6.0 x 1.5 cm with maintained architecture and intralesional blood flow characteristic of a lymph node A full head and neck exam was performed including a flexible laryngoscopy which did not reveal any abnormalities other than a palpable left 6.0 cm neck mass which was firm, non-tender, and mobile. CT neck demonstrated a large homogenous mass within the left neck measuring 6.0 x 3.4 x 2.7 cm, larger than on previous ultrasound (Figures 1, 2); with multiple other enlarged lymph nodes in the left jugulodigastric chain. Laboratory workup including CBC, CMP, immunoglobulin levels, thyroid panel, and AFB, was unremarkable. The case was discussed with radiology and oncology due to concern for a malignant process including lymphoma. The patient was taken to the operating room for excision of left neck mass. Final pathology revealed a 5.5 x 4 x 1.5 cm mass consistent with CD, hyaline vascular type. Immunohistochemistry was positive for CD20, CD3, CD5, CD21. HHV 8 PCR was negative. Flow cytometry did not reveal immunophenotypically abnormal cell populations.

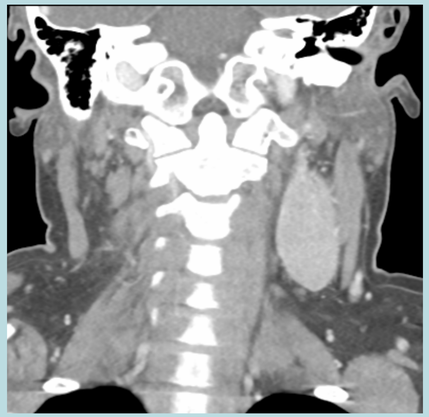

Figure 1. Computed tomography (CT) scan of the neck showing a large homogenous mass within the left neck measuring 6.0 x 3.4 x 2.7 cm (Case 3) [Coronal]

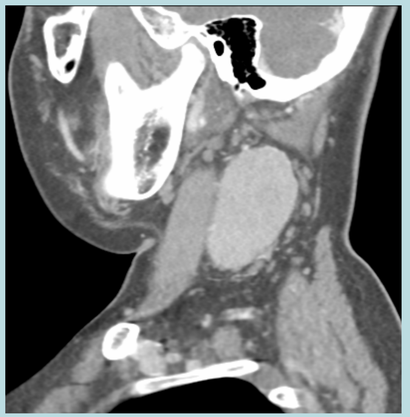

Figure 2. Computed tomography (CT) scan of the neck showing a large homogenous mass within the left neck measuring 6.0 x 3.4 x 2.7 cm (Case 3) [Sagittal]

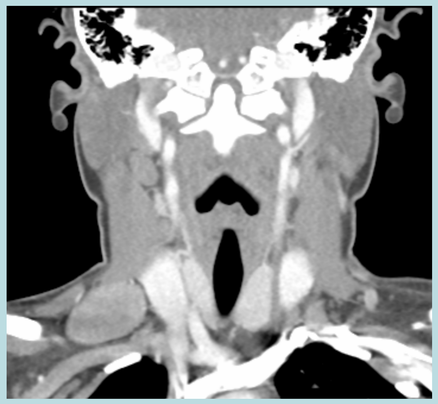

Figure 3. CT scan of the neck showing an oval-shaped, mildly heterogeneous, enhancing soft tissue mass with well-defined borders measuring 2.5 cm 3.9 cm 3.4 cm (Case 4)

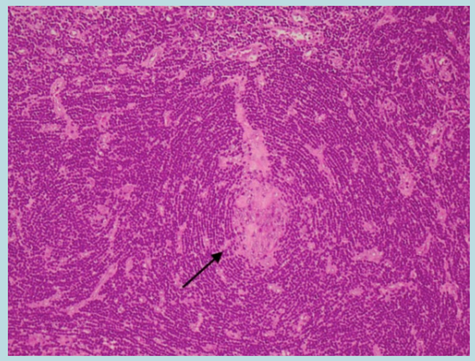

Figure 4. Lymph node showing follicular hyperplasia, small germinal centers, and prominent mantle zones with penetrating "onion-skinning" vessels with a "lollipop" appearance (black arrow) (Case 4)

CASE 4

This case has been previously published by our department. A 10-year-old female presented to our department with a four month history of an enlarging, right-sided neck mass. This mass was painless and did not arise in the setting of an infection. The patient denied systemic symptoms. On physical examination there was a soft, nontender, mobile, right supraclavicular mass. There were no overlying skin changes. The remainder of the physical examination was normal. Laboratory testing revealed an elevated ESR (14), and lymphocytes (57.7). Further lab testing including CBC, CMP, EBV, Bartonella, and CMV testing were otherwise normal. A neck ultrasound was obtained which showed a 4.0 cm x 1.4 cm solid right supraclavicular nodule with internal vascularity and well-defined borders concerning for an abnormal lymph node. CT scan of the neck showed an oval-shaped, mildly heterogeneous, enhancing soft tissue mass with well-defined borders measuring 2.5 cm x 3.9 cm x 3.4 cm (Figure 3). The mass mildly displaced the surrounding structures without clear invasion. The patient underwent excision and pathologic analysis revealed an enlarged lymph node with follicular hyperplasia, small germinal centers, and prominent mantle zones with penetrating "onion skinning" vessels with a "lollipop" appearance and marked vascular proliferation (Figure 4, black arrow). These morphological features favored the diagnosis of CD-hyaline vascular type. Cytogenetic testing was normal and EBV staining was negative. HHV 8 PCR testing was not performed.

DISCUSSION

Castleman disease presenting in the head and neck may pose a diagnostic dilemma because of its lack of any specific presenting characteristics and distinguishing radiographic features. This is demonstrated further within our series of cases. The patients in our study range from age 3 to age 19. Size of the masses did not correlate with any systemic symptoms or change in presentation. All of our cases were diagnosed as hyaline-vascular type of localized CD. Prior studies have demonstrated that approximately 75-90% of cases of the unicentric form are of the hylaline-vascular subtype. This is consistent with our series. These patients typically present with a solitary mass , lack systemic symptoms, and their disease follows a benign course. CT and MRI typically demonstrate a homogeneously enhancing mass. FNA is typically nondiagnostic, and the presence of lymphoid tissue may increase concern for lymphoma.

According to the largest literature review of Castleman Disease in the pediatric neck, the youngest patient with cervical CD was 5 years old. Our series highlights a patient diagnosed at age three (Case 1). Pediatric cervical CD is known to be a rare diagnosis. Despite its' rarity CD should be included in the differential for an isolated, asymptomatic pediatric neck mass. None of our patients underwent a full-body workup to exclude multicentric disease, and only one patient underwent HHV 8 testing. Multicentricity should be ruled out with consideration for PET scanning. Immunohistochemistry should be performed for LANA 1 to rule out HHV 8.

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