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Mindy R. Rabinowitz, MD
Thomas Jefferson University Hospital, Mindy.Rabinowitz@jefferson.edu

Jessica R. Levi, MD
Thomas Jefferson University Hospital

Katrina Conard, MD
Nemours/Alfred I. duPont Hospital for Children, Wilmington, DE

Udayan Shah, MD
Nemours/Alfred I. duPont Hospital for Children, Wilmington, DE

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Castleman Disease in the Pediatric Neck: Case Report and Literature Review

Mindy R. Rabinowitz, MD; Jessica R. Levi, MD2; Katrina Conard, MD3; Udayan Shah, MD2,4
1. Department of Otolaryngology-Head & Neck Surgery and 2. Department of Pediatrics, Thomas Jefferson University Hospital, Philadelphia, PA; 3. Department of Pathology and 4. Division of Otolaryngology, Nemours/Alfred I. duPont Hospital for Children, Wilmington, DE. Work performed at Nemours/Alfred I. duPont Hospital for Children.

Objective: To investigate the common features of cervical pediatric Castleman disease (CD).

Study Design: Case report and literature review of pediatric patients with cervical CD.

Methods: Online medical journal databases were searched for patients aged 18 years or younger. Eighteen published papers were found, comprising 29 cases. One case from our institution was also included for a total of 30 patients.

Results: An asymptomatic mass in level V was the most common presentation. No gender differences were noted. Multiple forms of imaging were pursued, and no particular modality was found to be diagnostic. Multiple forms of pathology were noted, and no particular histologic type was not reported. No recurrences of multicentric disease, plasma cell, or mixed histology were found. No recurrences were reported.

Conclusions: To better understand the clinical characteristics of this rare entity in children, in this study, we present a case study followed by an extensive literature review of pediatric cervical CD.

ABSTRACT

Castleman disease (CD) was first described by Benjamin Castleman in 1954.1,2 Since that time, CD has become better known in literature as a lymphoproliferative disorder of unknown etiology.3,4 Castleman disease can occur anywhere throughout the lymphatic system. The most common sites include the mediastinum (60%), neck (14%), abdomen (11%), and axilla (4%).5,6 While the underlying etiology is unknown, several hypotheses have been suggested. One theory postulates that the disease represents a reaction to a chronic viral antigenic stimulation. Some studies cite a role for interleukin-6 (IL-6).8 Castleman disease is rare in the pediatric population, although exact prevalence rates are not known.6,8,9 In children, CD has a more benign prognosis. It also has a different propensity for certain anatomic sites compared to adults, most commonly affecting the chest (33%), abdomen (30%), neck (23%), and axilla (7%).2,3,11 In contrast, the most commonly affected sites in adults are the chest (60%), neck (14%), abdomen (11%), and axilla (4%).7,11 To better understand the clinical characteristics of this rare entity in children, in this study, we present a case study followed by an extensive literature review of pediatric cervical CD.

INTRODUCTION

CASE REPORT

A 13-year-old female presented to our institution with a tender right neck mass that appeared suddenly. It had been present for six weeks, during which time the mass had not changed in size but did cause mild pain with head movement to the right. She had no significant previous medical history. Exam revealed a 4 x 6 x 3.5 cm mass deep to the lower half of the sternocleidomastoid muscle on the right. It was non-tender to palpation with no overlying skin changes. Routine laboratory tests were within normal limits. Titers for toxoplasma, cytomegalovirus (CMV), and Bartonella were negative. Epstein–Barr virus (EBV) IgG titers were elevated. Chest radiograph was within normal limits. Magnetic resonance imaging (MRI) revealed a well-defined, right-sided level III mass measuring 1.8 x 3.0 x 4.2 cm. It was bright on T2- and intermediate to slightly brighter than muscle on T1-weighted imaging (Figure 1). Several small vascular channels were apparent on the lesion by MRI. Several small lymph nodes along the inferior margin of the lesion extending down to the thoracic inlet were also noted. An additional 12 x 6 x 9 mm lesion was noted in the paraspinal musculature. A decision was made not to pursue this lesion given its small size and location, which would be unusual for CD. Fine needle aspiration (FNA) revealed atypical lymphoid proliferation. After discussion with the patient and family regarding the options, she was taken to the operating room, where a complete surgical excision of the mass was performed. Histologically, the nodal mantle zone showed concentric rings with an onion-skin appearance. Punctate blood vessels were frequently seen in these follicles (“pulp” features) (Figure 2). The irregular areas showed prominent hyalinized venules. Based on these findings, the postoperative histopathological diagnosis was HV-CD. At three months’ follow-up, she was doing well with no signs of recurrence.

MATERIALS AND METHODS

Online medical journal databases were searched for data collection. "Castleman’s disease" in combination with "neck," "cervical," and "pediatric," were keywords used for searching the PubMed database. Only patients aged 18 years and younger were included for analysis. After excluding reports on CD in other locations (ie, non-neck sites), 18 published papers were found, comprising 29 total reported cases of pediatric cervical CD (Table 1). The earliest case report published was in 1991 and the latest in 2012.5,9 In addition, one patient was diagnosed and treated at our institution. This patient was also included and brought our final patient count to 30 cases. This study is RIB exempt. All diagnoses of CD were based on histopathology.

DISCUSSION

In adults, the most common locations for CD include the chest (60%), neck (14%), abdomen (11%), and axilla (4%). In children, the chest (33%) remains the most common site of disease, followed by the abdomen (30%), neck (23%) and axilla (7%).2,3,11 Data are currently inconclusive as to the most common neck level for pediatric CD. In our literature analysis, level V was the most common location, representing 25% of lesions.

All of the evaluated children had unicentric masses. While no multicentric disease was found, it is important to note that only 17% (5 of 30) of children in this literature review received full body work-ups to rule out this possibility. Therefore, it is difficult to make this conclusion definitively.

Radiographic imaging is non-specific.4,5 CT was the most common modality used for neck mass work-up in this analysis (47%); however, the results argue that CT is no more specific for diagnosing CD than any other modality. As such, it is reasonable to conclude that while CD should remain on the differential diagnosis for any pediatric neck mass, the imaging modality of choice should be whichever modality will evaluate for the etiology highest on the differential diagnosis for an individual patient. Additionally, since most of these patients will proceed to surgery, pursuing CT or MRI may serve a dual purpose of both attempted diagnosis and preoperative planning. Imaging to search for multicentric disease should be based on the patient’s symptoms and on clinical suspicion.

Definitive treatment of unicentric CD involves surgical excision, with excellent prognosis. Lin et al reported no recurrence after 109 months of follow-up in one patient, which represents the longest follow-up of pediatric neck CD to our knowledge.11 Another study showed a 100% five-year control rate after surgical excision of an isolated cervical mass.12 Our analysis supports this data with no recurrences seen during a mean follow-up of 90 months.

CONCLUSIONS

Cervical pediatric CD is rare. It most commonly presents as an asymptomatic or slowly enlarging V mass. Imaging characteristics are often non-specific and do not aid in the diagnosis. Imaging is important in excluding other diagnoses and to allow for preoperative planning. It is specifically important in pediatric cases to avoid possible complications when performing a neck biopsy. When presenting in the pediatric neck, the diagnosis is likely HV-CD, which holds a favorable prognosis.

REFERENCES