Parapharyngeal Abscess Due to Cat-Scratch Disease

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The spectrum of illness attributed to cat-scratch disease (CSD) continues to expand. Although a common cause of cervical adenitis in children, CSD has not been associated as a cause of deep fascial space infections of the head and neck. We describe a child with extensive parapharyngeal adenitis and abscesses due to CSD confirmed by histological and serological evaluations.

Deep fascial space infections of the head and neck are relatively common and potentially life-threatening. Most of these infections are bacterial and polymicrobial in nature, resulting from extension of a pathological process in the structures of the mouth or pharynx (tonsils or teeth) or from structures on the external surface of the neck (adenitis or foreign body) [1]. Cat-scratch disease (CSD) usually presents as a subacute regional lymphadenopathy syndrome associated with cat contact [2]. To our knowledge, a parapharyngeal space infection as a manifestation of CSD has not been previously described in a child. Herein, we describe such a case, as determined by clinical, histological, and serological findings.

Case Report

A 14-month-old boy presented with a large mass on the right neck. The child had been healthy until 4 weeks earlier when his mother noticed an egg-shaped swelling on the right side of his neck that was associated with tactile fevers. He was treated in the preceding 3 weeks with oral antibiotics (amoxicillin/clavulanate followed by clindamycin). His condition improved only minimally, and he was admitted to the hospital for further evaluation and therapy. There was no history of rhinorrhea, cough, change in appetite, ill contacts, or animal contact. A tuberculin skin test with PPD was negative.

At physical examination, the patient’s vital signs were normal, he was the appropriate weight and height for his age, and he appeared generally well. A neck mass located posterior to the right sternocleidomastoid muscle and under the tragus of the right ear measured 5 × 3 cm². The mass was firm without erythema or fluctuation but was exquisitely tender. The mastoid area and oropharynx were normal. The rest of his physical examination was unremarkable. An initial laboratory evaluation revealed the following: peripheral WBC count, 14,700/mm³ (55% neutrophils, 34% lymphocytes, 8% monocytes, 2% eosinophils, and 1% basophils); hemoglobin level, 10.1 g/dL; platelet count, 445,000/mm³; and Westergren sedimentation rate, 75 mm/h. Electrolyte levels and results of liver function tests were within normal limits.

A CT scan of the neck on hospital day 2 demonstrated several enlarged lymph nodes with central necrosis in the right parapharyngeal space in continuity with the periphery (figure 1). On hospital day 4, CT-guided fine-needle aspiration of the lymph nodes drained 6 mL of green purulent material with no growth of bacteria, mycobacteria, or fungi. He was treated with iv oxacillin and penicillin (which was later changed to ampicillin/sulbactam). CT-guided fine-needle aspiration performed on hospital day 7 revealed a collection of histiocytes consistent with granulomatous disease, and Steiner staining (modified silver staining comparable with Warthin-Starry staining) [3] revealed rare pleomorphic rods. On hospital day 14, excisional biopsy of a superficial node was performed. Pathological examination of a node section revealed necrotizing granulomatous inflammation with large numbers of pleomorphic rods identified only by Steiner staining and not by gram (Brown-Brenn), periodic acid-Schiff, Giemsa, and Fite-Faraco staining.

At this time, the family provided a history of the patient playing with kittens 1 week before the onset of the neck mass. Immunofluorescent antibody testing [4] revealed a positive titer of antibody to Bartonella of 1 : 64 (County of Los Angeles, Public Health Laboratory). Titers of antibodies to Coccidioides immitis and Francisella tularensis were negative. The child received a 10-day course of gentamicin therapy and a 14-day course of rifampin therapy. The mass gradually became smaller in size, and he was discharged to home. A titer of antibody to Bartonella that was measured 4 weeks later was 1 : 128. At that time, he was doing well, and the mass was significantly smaller in size.

Discussion

As separate infections, CSD and deep fascial neck space infections are common in children. However, CSD as a cause of
deep fascial neck space infection has not been previously described in a child. We reviewed the literature and found 1 case of CSD mimicking a hypopharyngeal tumor in a 67-year-old man [5].

CSD is a clinical diagnosis that is based on a history of cat contact and regional adenopathy. The diagnosis can be supplemented by culture, special staining of tissue specimens, and serological or PCR testing [1, 4, 6]. Our patient was a healthy child with cat contact; his case was characterized by histological and cytological evidence of necrotizing granulomatous lymphadenopathy with an evaluation negative for mycobacteria and coccidioidomycosis, the presence of pleomorphic rods seen only by silver staining, and clinical resolution over time, findings which are consistent with CSD. In addition, immunofluorescent antibody testing revealed a positive titer of antibody to Bartonella species, which is highly specific; a titer of 1 : 128 would be expected in ≤4% of the general population [4, 7].

Therapy for CSD remains unclear despite several published reports and 1 controlled trial [1, 8, 9]. We chose to treat our patient with CSD with gentamicin and rifampin; however, the impact of antimicrobial therapy on this child is unclear, since therapy was started 6 weeks after the onset of symptoms, a surgical procedure was performed, and CSD can be a self-limiting disease, requiring weeks to months for complete clinical resolution.

The spectrum of clinical manifestations of CSD continues to expand and now includes (in addition to lymphadenopathy syndromes) granulomatous hepatitis, pneumonia, encephalopathy, neuroretinitis, osteomyelitis, and endocarditis [1]. This case illustrates that CSD may also cause deep neck infections with adenitis and that CSD should be considered in the appropriate clinical context.

References


