

Cat Scratch Disease: A Diagnostic Dilemma

L C Lina, MBBS; S Rosalind, MMed(ORL-HNS)*; A W Chong, MS (ORL-HNS); A Toha, MMed(Patho)**; B Shaffie, MS (Rad)***

Department of Otorhinolaryngology, Universiti Malaya, *Department of Otorhinolaryngology Hospital Raja Permaisuri Bainun, Ipoh, **Department of Pathology Hospital Raja Permaisuri Bainun, Ipoh, ***Department of Radiology Hospital Raja Permaisuri Bainun, Ipoh

ABSTRACT

Cat scratch disease (CSD) caused by *Bartonella henselae* is the most common *Bartonella* infection worldwide. CSD usually presents as self-limiting lymphadenitis characterized by lymphadenopathy that occurs after contact with a cat and the symptoms resolve within 2 to 4 months. Serology testing is the cornerstone of diagnosis. However, it may require the use of clinical specimens for microbiologic evaluation for diagnosis. A number of antimicrobial agents have been advocated for the treatment of cat-scratch disease and treatment with azithromycin has been shown to be beneficial.

KEYWORDS:

Bartonella henselae, Cat Scratch Disease, Lymphadenopathy

INTRODUCTION

Cat-scratch disease (CSD) is an infection caused by *Bartonella henselae*, a fastidious gram-negative bacillus acquired from exposure to an infected kitten or cat. The most common manifestation of CSD in human disease is lymphadenitis¹. CSD is an important cause of infectious lymphadenopathies in the head and neck. Nevertheless, CSD often remains unrecognized in cases of cervicofacial lymph node enlargement as it is often not considered by otorhinolaryngologists in patients with cervical lymphadenopathy. The tentative diagnosis will usually be cervical lymph node tuberculosis, deep neck abscesses, infected branchial cyst and malignant diseases such as malignant lymphoma, oropharyngeal or laryngeal carcinoma with lymph node metastasis². CSD is probably a more common cause of unclear masses in the head and neck than normally expected. The clinical symptoms range from painless lymphadenopathy to large cervical abscesses². CSD is largely a self-limiting disease, with an excellent prognosis for complete recovery even without specific anti-infective treatment¹.

CASE REPORT

A 29 years old lady presented to the ENT clinic with the complaint of painful left neck mass for 3 weeks duration which was associated with low grade fever. There was no history of contact with tuberculosis or any contact with cats. Examination revealed multiple cervical lymph nodes with the largest measuring 3x3cm. The ear, nose and throat examinations were normal. She was admitted and treated with intravenous cefuroxime and metronidazole for 4 days and the lymph node reduced in size. She was discharged with oral antibiotics for another 3 days. However, she was

readmitted a week after her discharge with complaint of severe painful cervical lymphadenopathy at the same site. The pain improved after intravenous ampicillin with sulbactam and she was discharge after 3 days. FNAC of the cervical lymph nodes revealed granulomatous inflammation and investigations for TB was negative. On her next review, the pain was less but the lymph nodes enlargement persisted and eventually turned fluctuant after 3 weeks. Therefore, an incision and drainage with wedge biopsy was performed. However, she developed a sinus formation over the incision site with persistent neck mass. CT scan of the Neck with contrast shows loculated collection deep to the left sternocleidomastoid with multiple subcentimetre cervical lymph nodes at level III. At this stage it was difficult to come to a conclusive diagnosis. The wedge biopsy turned out to be only necrotic tissue and no positive culture obtained from the pus. A surgical exploration of the neck was done and it showed multiple matted lymph at level II and III of the neck with the largest measuring 2x2cm with no other mass or tumour noted. Histopathological examination of the cervical lymph node had finally concluded it to be a cat scratch disease. She was treated with azithromycin for 7 days with adequate analgesia. The Indirect Fluorescent Antibody (IFA) for *Bartonella henselae* turned out to be negative, IgM <1:20 and IgG <1:20. In this case the IFA was only done 6 months after the onset of the symptoms; therefore the reliability is in doubt. As the cat scratch disease have not been commonly reported in this part of the region, the serological test was



Fig. 1: CT Scan of the Neck Contrasted (Coronal View) showing loculated collection deep to the left sternocleidomastoid with multiple subcentimetre cervical lymph nodes at level III.

This article was accepted: 29 June 2010

Corresponding Author: Lina Ling Chooi, Department of Otorhinolaryngology, Faculty of Medicine, University Malaya, Lembah Pantai, 50603 Kuala Lumpur Email: linalingchooi@yahoo.com

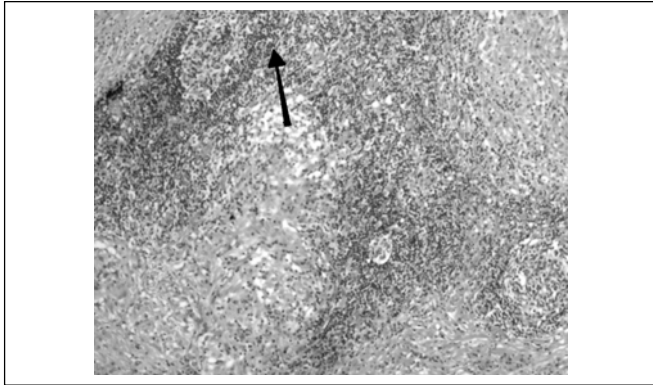


Fig. 2: Microscopic Histopathological appearance of the lymph node showing histiocytic granuloma with central microabscess.

only done after the confirmatory diagnosis was made and on completion of antibiotics. Moreover, because of the rarity of the cases and the cost of the test kit, the IFA examination is not routinely done in most the hospital. The serum samples has to be specifically sent to the Institute for Medical Research (IMR) laboratory to be processed. The cervical lymph nodes gradually regressed in size and eventually disappeared. She recovered 6 months after her initial symptoms and with no evidence of recurrence after 18 months.

DISCUSSION

Bartonella henselae is now considered a cosmopolitan emerging human pathogen and approximately 22,000 cases occurs in United State each year². History of cat contact, often in combination with scratches or bites should make any physician suspicious of an infection with *Bartonella henselae*. The presence of a primary inoculation papule or pustule at the scratch site strengthens the tentative diagnosis. However, establishing the diagnosis of CSD can be challenging if the primary inoculation site has healed or is unapparent and no history of animal contact is elicited. Lymphadenopathy is the most common clinical manifestation of CSD and is described in more than 80% of all cases. The location of the lymphadenopathy in CSD mostly depends on the site of inoculation. Approximately 10% of infected lymph nodes will become fluctuant and develop an overlying cutaneous erythema with the potential for spontaneous suppuration².

Indirect Fluorescent Antibody (IFA) is the most widely used and reliable serological test for CSD, showing 88 percent sensitivity and 97 percent specificity for IgG and IgM antibodies. The serological test has been suggested to be done as early as possible when the patient present with the symptoms. A high IgG antibody titer (>1:64) is suggestive of recent infection³. However, IgG antibody titers usually decrease over time, often remaining positive for *B henselae* for more than 2 years after the disease onset³. Additionally, IgM antibody titers may not always present; when present, they were low, ranging from 1:64 to 1:128. Ironically, low antibody titers can also be found among patients with CSD, which indicate the beginning or end of an illness³. Blood and infected tissue can be cultured, but the fastidious organism is difficult to isolate¹. Cat scratch disease should be considered in patients with chronic (> 3 weeks) lymphadenopathy. Serological test can be very helpful but if the cause of lymphadenopathy remains uncertain, a biopsy must be considered to rule out a benign or malignant neoplasm². Polymerase chain reaction (PCR) sequencing assay

may provide the highest diagnostic sensitivity, but unfortunately it is only available in few specialized laboratory.

J.Suzumiya *et al*, detected presence of *Bartonella hensale* in 67% of cases with abscess forming granulomatous lymphadenitis and 22% in non abscess forming granulomatous lymphadenitis using polymerase chain reaction (PCR). However none was seen in tuberculous or non granulomatous lymphadenitis⁴. This should alert us in the future to consider CSD as possible diagnosis if we do encounter patients with granulomatous lymphadenitis.

The indication for antibiotic treatment and the type and duration of the therapy is controversial³. Although CSD is generally self limiting and resolves spontaneously within 1 to 3 months, follow up been done to an average of 24 months for recurrences. Antimicrobial therapy may shorten the period of symptomatic illness, and may promote a more rapid resolution of clinical abnormalities associated with infection¹. Rifampin, ciprofloxacin, gentamicin, and trimethoprim-sulfamethoxazole were found to be effective. Penicillins, cephalosporins, tetracycline, and erythromycin had minimal or no clinical efficacy. The current practice is to treat with a course of azithromycin³. Azithromycin penetrates both macrophages and neutrophils and is highly effective against *Bartonella* species in a cell-free medium. This penetration achieves concentrations 40 times greater than concentrations in extracellular fluid. The preferential concentration of azithromycin in infected lymph node tissue may be the reason for the drug's effectiveness against *B henselae*³.

Approximately 33% of the feral cats and 10% of the pet cats are bacteremic with the organism¹. As prevention, the suspected cat need not be destroyed because it is invariably well and only 5% of family members scratched by the same cat develop CSD. The patient with CSD does not require isolation or quarantine, because there is no evidence of disease spread from human to human⁵.

CONCLUSION

Cat scratch disease occurs in all ages and should be included in the differential diagnosis of lymphadenopathies in the head and neck region. Although the condition improves in most patients with observation or antibiotic therapy, those patients who present to the otolaryngologist may have persistent or suppurative lymphadenopathy. Surgical lymphadenectomy affords confirmatory diagnosis, as well as adequate tissue for histopathological examination to rule out concomitant disease states.

REFERENCES

1. Dennis A. Conrad, MD. Treatment of cat-scratch disease Current Opinion in Pediatrics 2001; 13:56-59.
2. Gerd Jürgen Ridder, Carsten CB, Katja, Anna S. Cat-scratch disease: Otolaryngologic manifestations and Management Otolaryngol Head Neck Surg 2005; 132:353-8.
3. Patrick D,Thomas G, Diva R, Laura J, Rochester. Cat-scratch disease of the head and neck in a pediatric population: Surgical indications and outcomes. Otolaryngology-Head and Neck Surgery 2008; 139: 358-363.
4. J.Suzumiya *et al*, Prevalance of *Bartonella henselae* in granulomatous lymphadenitis : A useful tool for the diagnosis of the cat scratch disease by p;ymerase chain reaction. J Clin Exp. Haematopathol Vol 41, No 2, Oct 2001.
5. A.M. Margileth, M.H. Rathore. *Bortonella* species; Cat Scratch Disease in The Neurological Manifestations of Pediatric Infectious Diseases and Immunodeficiency Syndromes. Humana Press 2008: 243-250.