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Case Report

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Cat scratch disease presenting as increased intracranial pressure and aseptic meningitis

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ABSTRACT

Ocular cat scratch disease (CSD) is a condition attributed to infection by *Bartonella* sp. This condition commonly presents as neuroretinitis. Increased intracranial pressure and aseptic meningitis are rare presentation of CSD. We highlight a case of a 17-year-old female who presented with aseptic meningitis with neuroretinitis and raised intracranial pressure. The patient showed dramatic improvement with antibiotics and her neurological deficits recovered completely within 6 weeks of treatment.

1. Introduction

Infection caused by *Bartonella* sp. is typically self-limiting and characterized by lymphadenopathy and fever. It is commonly termed cat scratch disease (CSD) because domestic cats may act as a natural reservoir and vector for *Bartonella henselae* (*B. henselae*) which is responsible for human disease. Fleas are believed to transmit the infection between cats and transmission from an infected feline occurs via a scratch or bite. CSD has a wide spectrum of clinical manifestations that rarely includes ocular and neurological complications[1,5-8,10].

Despite the absence of an actual cat bite or scratch, this condition should be considered as a potential cause for patients with ocular and neurological manifestations such as described in this report. The dramatic improvement in ocular and neurological deficits seen with antibiotics serves as an additional reason to ensure the early diagnosis of CSD. Our aim is to report a rare case of CSD presenting with aseptic meningitis and neuroretinitis with raised intracranial pressure. We believe this is one of the first of such cases to be reported in literature.

2. Case report

A 17-year-old girl presented with one week history of blurring

of vision in both eyes. This was preceded by headache, neck pain and vomiting for 2 weeks prior to presentation. There was no eye pain, redness or diplopia. Patient denied history of malar rash, fever, weight loss or joint pain, numbness, weakness or history of seizures. Patient gave history of exposure to cats but denied being scratched or bitten by them.

On general examination her vitals were stable but she demonstrated signs of neck stiffness. There was no lymphadenopathy. Her best corrected visual acuity was 6/30 in the right eye and 6/21 in the left eye. Both anterior segments examination were unremarkable. Fundoscopy showed bilateral optic disc swelling and vessel tortuosity with an early macular star in left eye (Figure 1). Visual field revealed enlarged blind spot for both eyes. Color vision was also impaired in both eyes. There was bilateral sixth nerve palsy. Other cranial nerves were normal. There were no other neurological deficits.

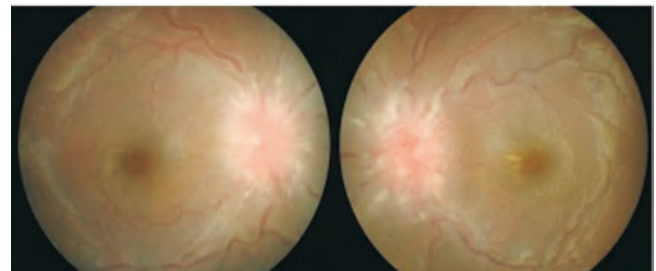


Figure 1. Fundus showed bilateral optic disc swelling and vessel tortuosity with an early macular star in left eye.

Lumbar puncture revealed an elevated opening pressure of 30 cm water with normal cerebrospinal fluid biochemical and cellular parameters. Blood investigations showed elevated erythrocyte

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sedimentation rate of 30 mm/h with significantly elevated *B. henselae* serology titres (IgM 1:48, IgG 1:128). Other investigations such as blood counts, renal function, liver function, antinuclear antibody and rheumatoid factor were normal. Serological studies for cryptococcus and toxoplasma were negative. Mantoux test and chest radiography were normal. CT and MRI of the brain revealed no abnormalities. There was no evidence of thrombosis, optic neuritis, meningitis, increased cerebrospinal fluid in optic nerve sheath, empty sella, hydrocephalus or any space occupying lesion.

Patient was diagnosed to have CSD. She was started on short course of oral acetazolamide 250 mg bd as well as oral ciprofloxacin 500 mg bd for 6 weeks. There was marked improvement of sixth nerve palsy within 6 weeks of treatment. The visual acuity improved to 6/9 in both eyes. Both optic disc swelling and macula star resolved (Figure 2).

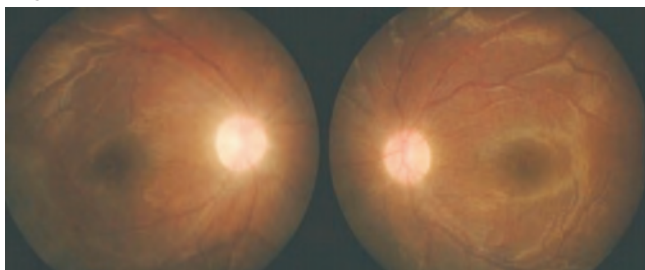


Figure 2. Resolution of optic disc swelling and macular star at 12-week follow-up.

3. Discussion

CSD is an infection caused by pleomorphic Gram-negative bacillus *B. henselae* which is associated with cat scratch or bite. The diagnosis is made based on symptoms, history to exposure to cats, clinical findings and positive serologic examination[1-9]. Commonly affecting children and young adults, patient may typically present with fever and lymphadenopathy which is self limiting with spontaneous resolution. CSD presenting atypically with ocular and neurological manifestations is well described in literature[1,2,6,9-12].

The spectrum of neurological conditions described in CSD most commonly includes encephalitis or encephalopathy. Multiple case reports have described symptoms such as seizures, focal neurological deficits and myelo-radiculitis occurring in these patients. It is thought to be attributed by direct invasion, effect of a neurotoxin, vasculitis or immune response. However, the exact pathophysiology behind cat-scratch encephalopathy remains unknown[6]. The rare occurrence of aseptic meningitis in CSD has also been illustrated in recent times[9-12]. Aseptic meningitis is diagnosed in the presence of meningeal signs such as headache, neck pain and vomiting associated with or without pleocytosis in cerebrospinal fluid as seen in this case.

The ocular complications of CSD seen in 5%-10% of patients most commonly affect the posterior segment of the eye with neuroretinitis. This is associated with inflamed and swollen optic discs and delayed macular star formation[1-5,7]. As was seen in our case, the macular star developed after the presentation of the swollen optic disc and took a longer duration to resolve as compared to the optic disc swelling. Abducens nerve palsy is not typically seen in CSD and maybe more likely a clinical sign related to elevated intracranial pressure. CT scans and MRI in most cases are normal with non specific slowing of electroencephalography (EEGs) and normal laboratory cerebrospinal fluid examinations.

In general, conservative treatment is advised for most patients with CSD due to the mild and self limiting behavior. Most patients with typical CSD will have spontaneous recovery without antibiotic treatment. Treatment with trimethoprim-sulphamethoxazole, ciprofloxacin or azithromycin is recommended for complicated cases of CSD such with ocular or neurological manifestation similar to this patient[1,4,7,10]. The dramatic improvement seen in this patient warrants the use of antibiotics in these circumstances.

In conclusion, CSD may present with increased intracranial pressure and aseptic meningitis. Serological marker is important for the diagnosis of *B. henselae*. Respond to antibiotic treatment is remarkable.

Conflict of interest statement

We declare that we have no conflict of interest.

Acknowledgements

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