Cat Scratch Disease

Introduction[1]

Cat scratch disease is an infection following the scratch of a cat (usually a kitten) with the organism *Bartonella henselae*, formerly known as *Rochalimaea henselae*. Dog and monkey bites have also been implicated, as well as pins, thorns and splinters. Ticks, bites and human-to-human transmission have been suspected as potential sources but none has been proved.

Other members of the *Bartonella* species can cause Oroya fever and trench fever. See separate *Bartonellosis* article for more details.

Epidemiology[2]

- The incidence is seasonal, with peaks in the autumn and winter, which may be explained by the breeding pattern of cats or the acquisition of pets at these times of year.

Presentation[1]

- Most patients (>90%) present with one or more erythematous lesions at the site of inoculation, 3-12 days after a scratch from a cat, most likely a kitten with fleas.
- The lesion is usually a crusted papule or, rarely, a pustule.
- One to three weeks after the appearance of the primary lesion, regional lymphadenopathy appears, usually next to the inoculation site. Lymphadenopathy is present in 90% of patients, primarily involving the axillary nodes, followed in frequency by cervical and inguinal areas. The nodes are often painful and spontaneously suppurate in 25-30% of cases.
- In more than half of cases in one study, systemic symptoms accompanied the lymphadenopathy.[3] These may include fever, malaise, headache and anorexia and often occur in immunocompromised patients.
- Bacillary angiomatosis can occur in immunocompromised (eg, AIDS) patients and represents a severe systemic form of the disease. It may compromise any tissue, especially the skin, presenting papules, nodules or angiomatous tumours.[4]
- A case of aseptic meningitis related to cat scratch disease has been reported. A history of contact with a cat should be sought in all aseptic meningitis patients presenting with regional lymphadenopathy.[5]

Atypically, the following may also occur:[1]

- Altered mental status, confusion (encephalopathy).
- Prolonged fever.
- Respiratory complaints (atypical pneumonitis).
- Myelitis, paraplegia, cerebral arteritis.[6]
- Joint pain (arthritis, synovitis).
- Back pain (rare).[7]
- Parinaud oculoglandular syndrome - this accounts for up to 20% of reports of *B. henselae* infection. Inoculation is via direct eye contact and characterised by unilateral granulomatous conjunctivitis with ipsilateral suppurative pre-auricular lymphadenitis.
- Neuroretinitis - this occurs in approximately 2% of patients. Patients present with unilateral or bilateral acute visual loss. Fundal signs include discrete white retinal/choroidal lesions, optic disc swelling, macular star and branch retinal vein occlusion (in order of frequency).[8]
- Abdominal pain - this can occur with associated hepatitis/splenitis, a self-limited granulomatous condition (hepatosplenic granulomatous disease).
- Other rare conditions:
  - Osteolytic lesions[9]
  - Erythema nodosum[10]
  - Thrombocytopenic purpura

Differential diagnosis[1]

The list of differential diagnoses is long, as it can include all known causes of lymphadenopathy. Depending to some extent on a history of exposure or travel to endemic areas, a short list would include:

- Brucellosis
- Infectious mononucleosis
- Sarcoidosis
- *Yersinia pestis* (plague)
- Tuberculosis
- Lymphogranuloma venereum
- Tick-borne diseases
- Syphilis
- Tularaemia
Other problems that may need to be considered include: atypical mycobacterium infection, lymphoma, collagen vascular disease, chronic granulomatous disease, pyogenic lymphadenitis, histoplasmosis, sporotrichosis.

Investigations[1]

- **Haematology.** This may reveal a mild leukocytosis and raised erythrocyte sedimentation rate (ESR) but these are nonspecific and of little value.
- **Serology.** Immunoglobulin G (IgG) titres will rise in acute infection, although patients may already have high levels at presentation. Titres above 1:64 are supportive of the diagnosis:
  - **Indirect fluorescent antibody (IFA) for Bartonella spp.** This is a highly sensitive and specific test, although they do not differentiate B. henselae from B. quintana (the organism responsible for trench fever), the urban type of which is sometimes seen in the homeless. It is the investigation currently favoured by the HPA.
  - **Polymerase chain reaction (PCR) testing of lymph node biopsy material.** This has improved the sensitivity of detection.
- Other tests which may be indicated in certain clinical situations include:
  - **Lymph node histopathology.** This may be useful in differentiating various causes of lymphadenopathy. It can be further enhanced by combining with immunofluorescent techniques.
  - **Cerebrospinal fluid analysis.** This may be performed to exclude other causes of encephalitis. Findings are usually normal but may show elevated protein or mild pleocytosis.
  - **Electroencephalogram (EEG).** This may demonstrate diffuse slowing in patients with encephalopathy, which resolves with clinical recovery.
  - **Imaging.** The increasingly heterogeneous presentation of cat scratch disease means that imaging is being increasingly used in diagnosis. Ultrasound, MRI or CT scanning may be appropriate to detect the typical low-density lesions in the liver, spleen and lymph nodes, particularly in cases where tuberculosis or malignancy is suspected.[11]

Management[1]

- Supportive therapy with antipyretics and analgesics should be given as needed and local heat may relieve the pain of enlarged lymph nodes.
- Aspiration of fluctuant tender nodes may help to relieve pain but incision and drainage should be avoided, as this may leave scars and fistulae. A minority of patients may, however, require surgical treatment.
- The condition is usually self-limiting in immunocompetent patients and, in the majority of patients, the lymph nodes gradually regress over weeks or months without antibiotics being needed.
- Antibiotics are, however, indicated in immunocompromised patients and atypical cases involving severe or systemic disease. Trimethoprim-sulfamethoxazole, ciprofloxacin or azithromycin are used first-line, with gentamicin being reserved for the severely ill patient.
- Patients should follow up in 2-6 months for confirmation of symptom resolution.

Prognosis[1]

Complete recovery is usual in 2-5 months. Rarely, there is severe hepatic or neurological involvement, in which case granulomatous hepatitis, neuroretinitis and peripheral neuritis can occur. The condition is more severe in patients whose immune system is compromised.

Prevention

Recommendations for prevention of cat scratch disease include:

- Vigilant elimination of fleas from cats.[12]
- Avoiding traumatic injury from cats, especially kittens. Cat-scratches and bites should be washed immediately and cats should not be allowed to lick open wounds.[13]

Further reading & references

- Cat Scratch Disease update; Centers for Disease Control and Prevention (CDC), 2014

13. Bartonella henselae and Cat Scratch Disease (CSD); Health Protection Agency, 2010 (archived content)

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