CASE REPORT

Ptosis, miosis and cats

Rita Espírito Santo, Catarina Salgado, Filipa Prata, Ana Mouzinho

Departamento de Pediatria,
Hospital Santa Maria, Centro
Hospitalar Lisboa Norte, Lisboa,
Portugal

Correspondence to
Dr Rita Espírito Santo,
a.r.espiritosanto@gmail.com

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SUMMARY

Horner's syndrome (HS) is caused by a disruption in the oculosympathetic pathway. Both congenital and acquired HS are unusual in children. Acquired HS can be caused by trauma, surgical intervention, tumours, vascular malformations or infection.

We describe the case of a 6-year-old boy who was brought to our emergency department with ptosis, miosis, painful cervical lymphadenopathy and a cat scratch on a hand. The diagnosis of a cat scratch disease was confirmed by serology. A full recovery was observed on antibiotic treatment and cervical lymphadenomegaly reduction 3 weeks later.

BACKGROUND

Horner's syndrome (HS) results an obstruction of the oculosympathetic pathway.^{1 2} The lesion can occur anywhere along the three-neuron tract, from its central origin to the innervation of the orbit.¹ Miosis and ptosis are the main clinical signs of HS, although iris heterochromia, pupillary dilation and anidrosis may also be seen.¹

Birth trauma is the most common aetiology of congenital HS. Other causes include vascular malformations, congenital neuroblastoma, congenital varicella and ectopic thymus in the neck.^{1 2}

In the absence of surgery or trauma, acquired HS can be caused by neoplasms (neuroblastoma being most common), arterial disease (dissection and aneurism) or infection.^{1 3}

Infection is a rare aetiology, but otitis media⁴ and intrapleural infections⁵ have been associated with HS.

We describe a case of an HS in the context of *Bartonella* infection with cervical lymphadenopathy.

A detailed clinical history and physical examination may identify the cause of HS.

CASE PRESENTATION

A 6-year-old healthy boy, living in a rural setting, with regular contact with farm animals (dogs, ducks, rabbits and two new kittens), presented with a painful left cervical mass (figure 1). A week later, he developed ptosis of the left upper eyelid. The family negated any other symptoms at this point. On the 15th day of the illness, the boy was brought to the emergency department. Physical examination confirmed the above findings and revealed ipsilateral miosis (figure 2), multiple bilateral centimetric axillary and inguinal lymph nodes, and a palpable liver border 2 cm below the right costal margin. On examination of the skin, he had a scratch on his hand, consistent with cat claws. He had no other focal neurological deficits, such as ophthalmoparesis, hemiparesis or changes, in his mental status.

The diagnosis of an HS was made with assumed cause of external compression, and he was admitted for further evaluation.

INVESTIGATIONS

Laboratory results were within normal values. Serologies for human immunodeficiency virus, cytomegalovirus, herpes simplex virus 1 and 2, HSV1/2 and toxoplasmosis were negative. Epstein barr virus (EBV) viral capsid antigen (VCA) IgM negative, VCA IgG positive and EBV nuclear antigen IgG positive. Antibodies for *Bartonella henselae* were IgM negative, but IgG positive at a titre of 1/64 and after 3 weeks, the titre rose to 1/512, confirming the diagnosis of bartonellosis. The chest X-ray was normal. A CT scan was performed and showed multiple cervical lymphadenopathies on the left side (figure 3).

TREATMENT

Treatment with amoxicillin and clavulanic acid was started on the day of admission and azithromycin was added on the following day for the presumptive diagnosis of cat scratch disease. The patient completed 5 days of azithromycin (10 mg/kg/day) and 7 days of amoxicillin/clavulanic acid (50 mg/kg/dose of amoxicillin, three times a day).

OUTCOME AND FOLLOW-UP

He was febrile (39.6°C) on the first day of admission. A clinical improvement was observed, becoming

Figure 1 Painful left cervical lymphadenomegaly.

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Figure 2 Ptosis of the left eyelid and miosis of the left pupil.

afebrile on the third day of admission. A progressive recovery of the ptosis and cervical adenopathies was seen. On day 5 of admission, he was discharged from hospital with isocoric and isoreactive pupils. He was re-evaluated 3 weeks later showing a complete recovery.

DISCUSSION

The approach to paediatric HS can be challenging, as the guidelines in the literature are not consensual. Neuroblastoma is the most significant treatable cause in this population, hence some authors recommend spot urine catecholamine metabolites (homovanillic acid and vanillylmandelic acid) and imaging of the neck and chest in all patients.^{3,6} As neuroblastoma have a tendency to calcification, CT scanning has a sensitivity of 50%–90%.² Nevertheless, as opposite to adults, in children, a benign cause of HS is found more frequently. As a detailed history and the CT scan findings were suggestive of an infectious aetiology, no further evaluation was

Figure 3 CT scan showing multiple cervical lymphadenopathy on the left side of the neck.

Learning points

- ▶ An accurate history is essential in any case of Horner syndrome (HS), as it can suggest the aetiology. If the cause is identifiable by clinical history and physical examination, an extensive evaluation to exclude the neuroblastoma is not needed.^{1–3,6}
- ▶ Any disease that presents cervical lymphadenomegaly can obstruct the oculosympathetic pathway and manifest as a HS.
- ▶ Cat scratch disease is an important cause of benign lymphadenopathy in children and adolescents, and it must be a diagnosis to consider while evaluating HS.

performed to exclude neuroblastoma. Other groups have a similar management.^{1,3,4}

Bartonella species are facultative intracellular Gram-negative rods that colonised domestic animals such as cats (kittens pose the highest risk), guinea pigs, rabbits and occasionally dogs. People became infected by being bitten or scratched by an infected animal.^{7,8} The regional or generalised lymphadenopathy occurs 1–3 weeks after inoculation and last for up to several months.⁸

The development of HS is explained by the compression of the second-order neuron of the oculosympathetic pathway due to a cervical adenomegaly in cat scratch disease. The laboratory confirmation of *B. henselae* infection is usually made by serology tests. Positive IgM antibodies indicate acute disease, but they are only identified in 50% of infected individuals.⁸ IgG titres between 1/64 and 1/256 suggest that possible infection and the test should be repeated in 10–14 days. Titres greater than 1/256 suggest active or recent infection. In our patient, the titres rose to 1/512. Polymerase chain reaction has a very high specificity, but the sensitivity is lower than serology.⁹

In most cases, the resolution of the symptoms occurs without any treatment. The indication for antibiotic therapy depends on the manifestations of the disease and host immunity. In our case, due to neurological symptoms, we decided to treat the patient. Azithromycin reduced the duration of the disease⁸ and a good response was achieved.

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REFERENCES

- 1 Smith SJ, Diehl N, Leavitt JA, *et al.* Incidence of pediatric Horner syndrome and the risk of neuroblastoma: a population-based study. *Arch Ophthalmol* 2010;128:324–9.
- 2 Cahill JA, Ross J. Eye on children: acute work-up for pediatric Horner's syndrome. case presentation and review of the literature. *J Emerg Med* 2015;48:58–62.
- 3 Barrea C, Vigouroux T, Karam J, *et al.* Horner syndrome in Children: a clinical condition with serious underlying disease. *Neuropediatrics* 2016;47:268–72.
- 4 Kava MP, Bynevelt M, Lannigan F, *et al.* Horner's syndrome in a child with otitis media: an unusual complication. *Pediatr Neurol* 2011;45:209–10.
- 5 Knyazer B, Levy J, Rosenberg E, *et al.* Horner's syndrome in an infant with complicated pneumonia. *Isr Med Assoc J* 2011;13:504–6.

- 6 George ND, Gonzalez G, Hoyt CS. Does Horner's syndrome in infancy require investigation? *Br J Ophthalmol* 1998;82:51–4.
- 7 Mazur-Melewska K, Mania A, Kemnitz P, *et al.* Cat-scratch disease: a wide spectrum of clinical pictures. *Postepy Dermatol Alergol* 2015;32:216–20.
- 8 Morgan R, Teh J, Craze J, *et al.* Unusual cause of lymphangitis in a 2-year-old boy. *BMJ Case Rep* 2016;2016:bcr2016215058.
- 9 Biancardi AL, Curi AL. Cat-Scratch Disease. *Ocul Immunol Inflamm* 2014;22:148–54.

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