Introduction

We report a case of eosinophilic meningitis following the consumption of monitor lizard meat (Varanus bengalensis). The history, clinical features and the cerebrospinal fluid (CSF) findings were suggestive of an infection with Angiostrongylus cantonensis, a nematode parasite of the rat lung. The exacerbation which occurred following the treatment with anthelminthics is emphasised.

Case report

A previously healthy 16-year old boy was admitted to a medical unit at the National Hospital of Sri Lanka with vague ill health of 10 days, intermittent low grade fever, severe headache, and paraesthesiae of legs. He did not give a history of neck pain, fits or symptoms suggestive of a focal lesion.

Ten days before the admission, he had consumed monitor lizard meat and although initially it was followed by abdominal discomfort and vomiting he had eaten the remainder by evening. He denied the consumption of seafood such as crabs, prawns or fish and green leafy vegetables.

He was afebrile, and apart from mild neck stiffness, the systemic examination was unremarkable. On admission, following the clinical diagnosis of bacterial meningitis, he was started on intravenous cephalosporin, but failed to show improvement.

Investigations revealed a peripheral blood leucocytosis with marked eosinophilia (white cell count – 16.2 × 10⁹/L, neutrophils 52%, lymphocytes 20%, eosinophils 27%, monocytes 1%). Platelets, haemoglobin, urine analysis, erythrocyte sedimentation rate, serum electrolytes, and blood urea were normal. Filarial antibody test, blood for malarial parasite, Mantoux test, stools for ova and cysts were negative. The CSF analysis showed clear, colourless fluid, containing high protein (120 mg/dL) with an increased cell count (384/mm³) and the smear showed abundant eosinophils with few lymphocytes. Organisms and acid-fast bacilli were not detected. At this stage, a diagnosis of eosinophilic meningitis was made. The antibiotic was omitted and anthelminthic, albendazole was commenced.

Within 24 hours of starting the anthelminthic, a marked deterioration in sensorium was apparent and he was transferred to the Neurology Unit. The electroencephalogram showed frontal intermittent delta waves suggestive of raised intracranial pressure and the contrast computed tomography (CT) of brain was unremarkable. A repeat CSF analysis showed total cell count of 560/mm³ with over 50% eosinophils. This was confirmed with Leishman stain. Further haematological and biochemical investigations, including blood culture, antibody against Toxoplasma gondii, c-ANCA, p-ANCA, Venereal Disease Research Laboratory, and HIV antibody assay were negative.

Following the exacerbation, anthelminthics were omitted. The patient was started on intravenous dexamethasone 8 mg, eight hourly and he underwent two therapeutic lumbar punctures. The deterioration continued for 2 days but gradually a slow, steady improvement was observed within a week. With recovery, oral dexamethasone was started and subsequently tapered over 4 weeks.

The patient was reviewed following discharge, initially fortnightly and thereafter at monthly intervals for 8 months. The repeat CSF analysis and the serial complete blood counts were normal and the patient remained asymptomatic.

Discussion

The commonest infective cause of eosinophilic meningitis worldwide is by the nematode parasite, Angiostrongylus cantonensis. Humans are infected by accidental ingestion of the third stage larvae in raw or inadequately cooked intermediate hosts, such as snails, slugs or paratenic (carrier) hosts, including fish, amphibians, reptiles, crustaceans, or by eating vegetables and green leaves contaminated with larvae. The larvae of A. cantonensis are inherently neurotropic and following ingestion by humans, they migrate to both central nervous system (CNS) and eye.

In the literature search we came across only a few case reports of eosinophilic meningitis following consumption of raw or partially cooked monitor lizard (Varanus bengalensis) meat [1,2]. This is the first case report of a similar incidence in Sri Lanka, although eosinophilic meningitis has been reported earlier [3]. Consumption of monitor lizard meat is a well known delicacy in our island. These lizards feed on snails, beetles, crabs, frogs, rodents and vegetables.
The predominant symptom in our patient was an acute severe headache with paraesthesiae of extremities. This is the commonest symptom of cerebral angiostrongyliasis. Other symptoms with which these patients may present are visual loss, blepharospasms and transient cranial nerve palsies, especially of the seventh nerve. Fever, however, is an uncommon complaint.

Our patient was diagnosed on the history of ingestion of partially cooked monitor lizard meat, clinical features and the presence of CSF pleocytosis with over 50% of eosinophils. Paraesthesiae or hyperaesthesiae supports this diagnosis as these symptoms are unusual in other forms of meningitis.

Diagnosis is further aided by enzyme-linked immunosorbent assay (ELISA) to detect the antibodies to A. cantonensis and a more specific serological test to detect antibodies against the 31-kD antigen of A. cantonensis [4]. Chye and others have recently described an even more promising technique for the detection of A. cantonensis antigens in serum samples, using Immuno–PCR [5]. These serological tests are not available in Sri Lanka.

The CSF was analysed for the presence of parasites on all occasions the patient underwent lumbar puncture, but could not be detected. The demonstration of parasites is confirmatory.

The changes in the CT scan of brain in cerebral angiostrongyliasis can vary from being normal to non-specific findings. The CT imaging done on two occasions in our patient was normal. The magnetic resonance imaging (MRI) findings in CNS infection with A. cantonensis have been reported to be non-specific, ranging from normal to leptomeningeal enhancement, ventriculomegaly, punctuate area of abnormal enhancement, and hyperintense signal lesions on T2-weighted images [6].

Following the diagnosis of eosinophilic meningitis in our patient, albendazole was started, but this led to an exacerbation of his condition. However, albendazole and levamisole had been used in Taiwan and China with apparently good results [7,8]. A similar exacerbation, as seen in our patient, was reported from New Hebrides (Republic of Vanuatu), where two patients were treated with thiabendazole [9]. In a study on the outbreak of eosinophilic meningoencephalitis caused by Angiostrongylus cantonensis in travelers returning from the Caribbean, anthelmintics had been withheld considering the theoretical possibility of exacerbation following the death of larvae in the central nervous system [10]. Many experimental studies on drug treatment of Angiostrongylus species have been carried out in mice and rats [11]. The place of anthelmintics in A. cantonensis infection in humans will remain a controversy until a randomised controlled study is conducted.

The optimal symptomatic management of eosinophilic meningitis secondary to A. cantonensis infection is also not known. Serial therapeutic lumbar punctures and corticosteroids have been reported to improve the symptoms [10]. A 2-week course of prednisolone 60 mg/day has been recommended by Chotmongkol and others following their study on corticosteroid treatment for eosinophilic meningitis [12].

In our case report we wish to emphasise the need of being cautious when using anthelminths in cerebral angiostrongyliasis, as there are no trial data on humans to support the efficacy. Although case reports on monitor lizards being paratenic hosts for A. cantonensis infection are few in number, awareness of this possibility will be of benefit for those who indulge in such delicacies.

Acknowledgement

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References


We report here the history of a 52-year old woman with diabetes mellitus for 10 years and secondary hypothyroidism (low TSH) who presented with chronic persistent headache for 6 years and sudden onset of complete blindness of 24 hours duration, admitted to our unit at National Hospital of Sri Lanka in July 2004. On the first admission in 1998, a cranial CT scan demonstrated a lesion suggestive of a macroadenoma of the pituitary gland, with posterior extension of the tumour towards the petrous temporal bone (Figure 1). The tumour was not removed as it was deemed unsuitable for surgical excision. She was started on medical therapy with bromocriptine, prednisolone, and thyroxine. A follow up CT scan in 1999 showed reduction in the size of the tumour height with no reduction in its extension to the cavernous sinus. MRI scan revealed thickening of the cavernous sinus and a compressed pituitary gland (54 mm). In the same year she was readmitted with a persistent headache and blurring of vision in the left eye.

Clinical examination at this stage revealed left-sided optic atrophy and bilateral abducens nerve palsy. In 2002, the next admission for a worsening headache revealed severe right-sided maxillary sinusitis. By this time her abducens nerve palsy was abated. She was treated with a course of co-amoxiclav and showed symptomatic improvement. The diabetes mellitus was under reasonable control with oral hypoglycaemic agents.

On clinical examination at the current admission, her BMI was 25. She was pale with mild facial puffiness. Her pulse rate was 80/min, and the BP was 100/80 mmHg. The cardiovascular and respiratory systems and the abdominal examination were clinically normal. Her higher cerebral functions, cerebellar functions, peripheral motor and sensory systems were intact. Cranial nerve examination showed bilateral dilated pupils, but there was no ophthalmoplegia. Funduscoppy demonstrated bilateral optic atrophy. On the second day after admission, the patient developed right-sided oculomotor and abducens nerve palsies. She was treated with a large dose of prednisolone. At the end of 3 weeks of hospital stay her oculomotor and abducens nerve palsies had completely disappeared.

Laboratory investigations revealed haemoglobin of 10.4 g/dL, white blood cell count 14,600 µ/L (neutrophils 70%, lymphocytes 25%), platelet count 20,300 µ/L, fasting blood glucose 5 mmol/L, blood urea 3 mmol/L, sodium 143 mmol/L, potassium 3.8 mmol/L. ESR was 70 mm in the first hour and serum calcium 2.18 mmol/L. Antinuclear factor was negative, and antineutrophil cytoplasmic antibodies (PR3 ANCA) negative. Liver function tests were normal. The chest radiograph was normal. Blood picture revealed normocytic normochromic anaemia. The pituitary hormone estimations showed, serum basal 9 a.m. cortisol 36 nmol/L, growth hormone 1 mU/L (normal range < 20 mU/L) serum prolactin 1071 mU/L (normal range 0–400 mU/L). LH < 1 U/L.

Figure 1. Macroadenoma of the pituitary (arrow).

An unusual case of hypopituitarism and recurrent cranial nerve palsies

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(Index words: Intracerebral vasculitis, magnetic resonance angiogram)

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