

EOSINOPHILIC MENINGITIS TREATMENT



1

INTRODUCTION

- Eosinophilic meningitis is defined as the presence of **more than 10 eosinophils/mm³** in the cerebrospinal fluid (CSF)
- Eosinophils accounting for **more than 10 percent of CSF leukocytes**

NONINFECTIOUS ETIOLOGIES

- Hematologic disorders
 - Hypereosinophilic syndrome
 - Neoplastic diseases : Hodgkin lymphoma
- Adverse drug reactions (NSAIDs, ciprofloxacin, trimethoprim-sulfamethoxazole, and intraventricular vancomycin or gentamicin)
- Ventriculoperitoneal shunt implantation or malfunction



NONPARASITIC INFECTIOUS ETIOLOGIES

- Coccidioidomycosis
- Visceral myiasis
- Viral, rickettsial, and bacterial infections



PARASITIC ETIOLOGIES

- Three important parasitic infections
 - *Angiostrongylus cantonensis*
 - *Baylisascaris procyonis*
 - *Gnathostoma spinigerum*
- Humans are incidental hosts

- *G. spinigerum* can cause meningeal or extrameningeal infection.
- Self-limited: larvae do not replicate or mature to adult worms.
- Eosinophilic meningitis: a result of larval migration within the nervous system

ANGIOSTRONGYLUS CANTONENSIS

- The most common parasitic
- *A. cantonensis* larvae are neurotropic
- Risk of infection
 - Human eating raw snail or slug
 - Children playing in the dirt in endemic areas
- *A. cantonensis* occurs in Southeast Asia and the Pacific basin

TREATMENT

- Not administering anthelmintic agents (**Grade 1B**) because may elicit an inflammatory response due to dying organisms.
- Analgesics, corticosteroids and periodic removal of CSF can relieve symptoms due to elevated intracranial pressure

CORTICOSTEROIDS FOR PARASITIC EOSINOPHILIC MENINGITIS

Cochran 2012 : RCTs of corticosteroids versus placebo for eosinophilic meningitis

- 110 participants (55/group) ≥ 15 year old
- Prednisolone – 60 mg/day, three doses in two weeks in treatment group

THE RESULT

- Shortening the median time to resolution of headaches (5 days in the treatment group versus 13 days in the control group, **P < 0.0001**).
- Smaller numbers of participants who still had headaches after a two-week course of corticosteroids treatment (**9.1% versus 45.5%, P < 0.0001**).

THE RESULT

- Reduction in median time of analgesics use in participants receiving corticosteroids (**10.5 versus 25.0, P = 0.038**).
- **No reported adverse effects** from prednisolone in the treatment group.

AUTHORS' CONCLUSIONS

- Corticosteroids significantly help relieve headache in patients with eosinophilic meningitis.
- However, there is only one RCT supporting this benefit .Future well-designed RCTs may be necessary.

CORTICOSTEROID OR THE COMBINATION OF CORTICOSTEROID AND ANTIHELMINTHIC DRUG

- 53 patients in the combined treatment group and 51 patients in the prednisolone alone group
- The number of patients who still had headaches after 14 days : 0 versus 1 (P = 0.49)

CORTICOSTEROID OR THE COMBINATION OF CORTICOSTEROID AND ANTIHELMINTHIC DRUG

- The median length of time until complete disappearance of headache : 3 versus 3 days ($P = 0.32$).
- Prednisolone plus albendazole is no better than prednisolone alone for treatment of patients with eosinophilic meningitis.

GNATHOSTOMIASIS

- *G.spinigerum* larvae can migrate in subcutaneous , visceral, and neural tissue
- Infected by eating undercooked fish, poultry or snake meat containing third stage larvae
- Gnathostomiasis is endemic in Southeast Asia and parts of China and Japan

TREATMENT

- **NOT** administering anthelmintic agents (**Grade 2B**)
- Analgesics and corticosteroid can alleviate symptoms
- For treatment of cutaneous gnathostomiasis: albendazole (400 mg orally twice daily for 21 days) or ivermectin (200 mcg/kg/day orally for two days) (**Grade 2C**)



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