

中文題目：腦神經術後的混合性念珠菌腦膜炎

英文題目：A case of mixed *Candida* infection of CNS following neurosurgery

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Introduction : *Candida* infection of the central nervous system(CNS) mostly presents as meningitis.

The risk includes premature neonate, immunocompromised patient and neurosurgery¹. Among the CNS infection following neurosurgery, the incidence of *Candida* infection was relatively rare but can be life-threatening.² We present a case of mixed *Candida* species infection of CNS after craniectomy.

Case Presentation : A 58 year-old female with communicating hydrocephalus due to

subarachnoid hemorrhage s/p left parietal V-P shunt insertion six years ago presented a 6-month history of unsteady gait and frequent falling down. The brain CT revealed left cerebellopontine angle tumor. The suboccipital craniectomy was performed three day later. The pathology showed schwannoma. However, fever and consciousness disturbance were noted on post-operation day(POD) 10. Giemsa stain found yeast with pseudohyphae. Micafugin (100 mg QD IVD) was added initially. Ventriculo-peritoneal(VP) shunt was revised on POD 14. Micafugin was changed to fluconazole(500 mg QD IVD) on POD 15 because CSF culture showed *Candida albican*. Owing to high fever and abdominal pain on POD 27, abdomen CT showed thickening of the peritoneum along the tract of the VP catheter with adjacent fat plane infiltrations. Under the impression of peritonitis and VP shunt related meningitis, Vancomycin(1g Q6H) and ceftazidime(2g Q8H) were given during POD27-41. The VP shunt was revised again on POD 28. CSF Gram stain showed bulging yeast and culture revealed *C. glabrata* on POD30. The VP shunt was removed and extraventricular drainage(EVD) was established on POD 37. VP shunt re-implanted on POD 56. Fluconazole was discontinued on POD 61(total course: 47 days) because of clinical improvement, resolution in CSF data without pathogen growth. Then, she was discharged on POD 78.

Discussion : The classic symptoms of *Candida* meningitis were headache, consciousness change, neck stiffness and fever as bacterial meningitis. The major predisposing factors of VP shunt-related *Candida* meningitis were recent bacterial meningitis, neurosurgery, and abdominal complications.⁴

Among neurosurgery-related *Candida* meningitis, there have been reports of neutrophilic pleocytosis in 62% of cases.⁶ This means a more difficult to distinguish from bacterial meningitis. In our case, the serial CSF analysis showed neutrophilic pleocytosis.

The positive rate of CSF Gram stain is 40% and the positive rate of CSF cultures is about 80%.¹ *C.*

albican is the most common pathogen and *C. glabrata* is rare.^{1,2,5} We presented an extremely rare case of *C. albican* and *C. glabrata* mixed infection of CNS following neurosurgery. There have no such case report so far.

The choice of induction therapy is liposomal amphotericin B (3-5 mg/kg/day IVD) with/without flucytosine (25 mg/kg PO QID). Fluconazole has good CNS penetration and can be used as step-down therapy (6 to 12 mg/kg PO/IV QD) if the *Candida* are susceptible species.⁷

Echinocandins should not be used due to poor CSF penetration.³ The antifungal therapy should be continued until resolution of CSF data, radiographic and clinical abnormality.⁷ It may take weeks to months. Removal of infected ventricular devices is also recommended. In our case, the patient initially received micafungin which was shifted to fluconazole later. The VP shunt was revised and removed several times for infection control. The total fluconazole course was 47 days. Finally, the *Candida* infection of CNS was successfully resolved.

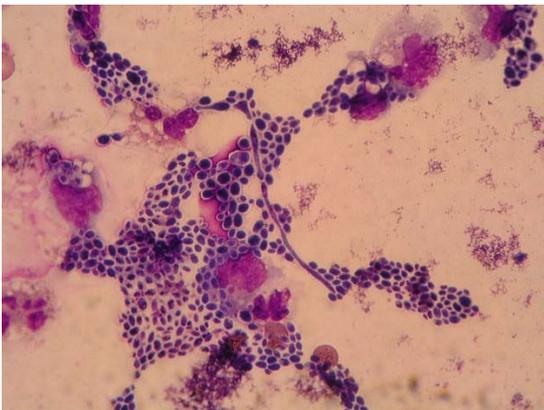
The mortality rate of neurosurgery related *Candida* meningitis was 10-27%.^{2,6}

Reference

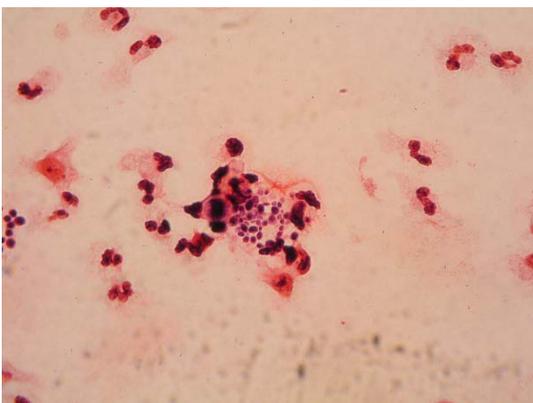
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Giemsa stain(10/22)



Gram stain(11/10)



內科醫學會 105 年年會「海報展示」報名表

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