

Community-onset brain abscess caused by hypervirulent *Klebsiella pneumoniae* in healthy adult

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Introduction: The most common causative bacteria in brain abscess are *Streptococcus* and *Staphylococcus* species. Aerobic gram negative bacilli accounts for about 15%, associated with nosocomial and post-neurosurgery state. We report the case of community-onset brain abscess caused by hypervirulent *Klebsiella pneumoniae* without predisposing factors in a healthy adult.

Case presentation: A 42-year-old man was admitted to our emergency department with a week of fever and headache. Initial vital signs were within normal range except a body temperature of 38.7°C. The physical examination revealed that he had a mental status of confusion, neck stiffness and normal limb motor and sensor. He had good physical health (without organ transplant, diabetes mellitus, long term use of steroid) and a history of craniotomy due to traumatic intracranial hemorrhage twenty-six years ago. He had no evidence of sinusitis and dental infection. Biochemistry panel showed high-sensitivity C-reactive protein of 109.4mg/ℓ and procalcitonin of 1.98ng/ml without leukocytosis. Cerebrospinal fluid was cloudy with the following abnormalities: glucose of 5mg/dℓ, protein of 510.7mg/dℓ and white blood cells of 2,460/mm³ (81% of polymorphonuclear cells) with normal intracranial pressure. Blood and CSF culture were negative. Brain MRI demonstrated the lobulated lesion with ring enhancement suggestive of abscess in left frontal area and craniotomy site. (Fig.1) Empiric treatment for brain abscess with intravenous vancomycin, ceftriaxone and metronidazole was commenced. Neurosurgery team performed abscess removal. Pus culture was identified as *Klebsiella pneumoniae*. The PCR tests for capsular genotyping of K1 and K2, and seven virulence genes (*rmpA*, *entB*, *ybtS*, *kfu*, *iutA*, *mrkD*, *allS*) were performed and it showed K1 capsular serotype with positive result in seven virulence genes. The isolate was resistant only to ampicillin. Intravenous ceftriaxone was maintained for 6 weeks. The clinical course was improved, and he was discharged.

Conclusion: Clinician should consider hypervirulent *K. pneumoniae* as causative agent of community-onset brain abscess associated with gram-negative organisms in a healthy adult.

