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內文：

Introduction

1. Brain abscess
 - A rare, life-threatening infection
 - A localized area of suppuration within the brain
 - Recent advances in neuroscanning techniques such as CT and MR imaging and the introduction of more effective antibiotics have reduced the mortality rate
 - Brain abscesses spreading from the pericranial contiguous focus of the paranasal sinuses, the middle ear, or a dental infection are reported to account for 25–50% of the cases
2. Osteonecrosis
 - Common side effect of antiresorptive drugs, which are administered to cancer patients to treat bone metastasis, multiple myeloma, and osteoporosis
 - Medication-related osteonecrosis of the jaw
3. Reports of a brain abscess resulting from MRONJ are very rare

Case Report

A brain abscess caused by a maxillary MRONJ that extended to the maxillary sinus and ethmoid sinus

1. Present Illness
 - A 76-year-old man
 - Three-month history of swelling of the left mandible
 - Stage IV prostatic carcinoma and multiple distant metastases
 - Zoledronic acid 4 mg for 22 times
 - Denosumab 120 mg for 4 times
2. Extraoral Examination
 - Face was symmetrical
 - A fistula and pus discharge on the skin of the left mandible
 - The regional lymph nodes were normal
 - No trismus
3. Intraoral Examination
 - Gingival swelling, redness, pus discharge, and loosening of teeth 35 and 36
 - Tooth 17 was lost naturally 2 months after the first visit, which revealed a sequestrum in the mouth



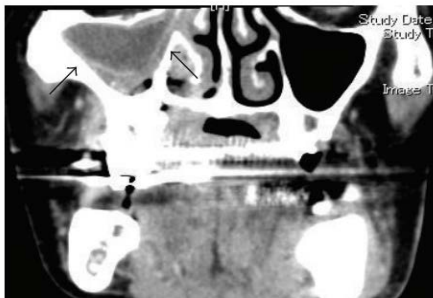
4. Panoramic Radiograph

- Separated sequestra of the right maxilla and the left mandible



5. Computed Tomography

- Maxillary osteitis and sinusitis
- An abscess had formed in the right maxillary sinus, and the patient complained of mild ophthalmalgia



6. Surgery

- Sequestrectomy of the right maxilla and drained the maxillary sinus under local anesthesia

7. Postsurgery

- Day 0: uneventful, discharged from the hospital
- Day 1
 - Be found unconscious in his house on the day after surgery and was brought by ambulance to the emergency room (ER) at our hospital.
 - Left conjugate deviation and left hemiparesis
 - Left upper and lower limb convulsions

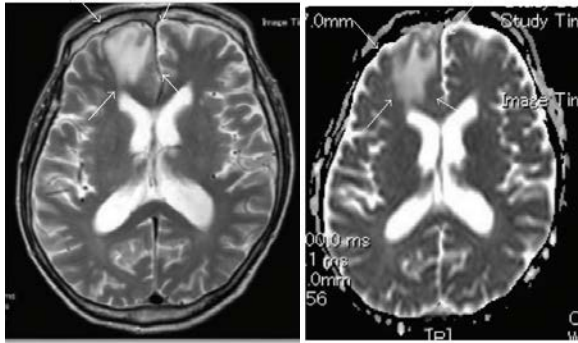
8. Brain CT

- A hypodense lesion in the right frontal lobe



9. MRI

- A right frontal lobe abscess and ethmoid sinusitis

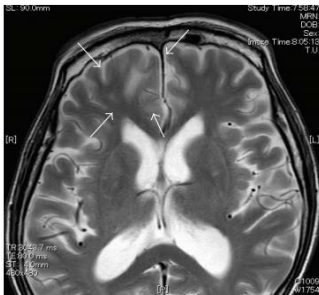


10. Treatment

- Ceftriaxone 2g q12h and metronidazole 500mg q8h for 50 days
- Valproate Na 800 mg for convulsions
- This case was treated conservatively, without surgery, because the patient had terminal-stage cancer

11. After treatment

- MR image obtained one month after beginning treatment



- The patient was discharged from the hospital after 2 months, without any left-limb paralysis

Discussion

1. Brain Abscess

- Originate
 - Exogenously: skull trauma or surgery
 - Endogenously: infections of contiguous structures, meningitis, or the hematogenous spread of a remote infection
- A brain abscess caused by MRONJ is very rare

2. MRONJ

- The number of patients with MRONJ has grown recently. MRONJ is defined by the following characteristics
 - Current or previous treatment with antiresorptive or antiangiogenic agents
 - Exposed bone or bone that can be probed through an intraoral or extraoral fistula in the maxillofacial region for more than 8 weeks
 - No history of radiotherapy to the jaw
 - No obvious metastatic disease in the jaw

3. A dental infection or ethmoid or frontal sinusitis that spreads to the brain generally causes a solitary brain abscess in the frontal lobe

4. Prognosis

- Poor prognostic indicators include delayed diagnosis, a disease with rapid progression, coma, multiple lesions, intraventricular rupture (seen in immunocompromised patients)
 - Our patient was immunocompromised due to terminal prostate cancer

- Mortality rate
 - In the past: 60%
 - new antibacterial approaches and new imaging technologies have decreased this mortality, and recent large case series have reported a mortality of 0%–25%
5. Treatment
- Recommend treatment for a brain abscess originating from the paranasal sinuses, middle ear, or a dental infection
 - Metronidazole 500 mg q8h and cefotaxime 2g q6h
 - Our case
 - Metronidazole 500mg q8h and ceftriaxone 2g q12h for 50 days
 - Immediate administration of high-dose intravenous antibiotics, followed by surgical craniotomy and resection of the abscess cavity with the removal of possible septic foci
6. Clinical Symptoms and Signs
- Depending on the origin, size, and location of the abscess, the virulence of the infecting organisms, and the underlying systemic conditions
 - Headache, nausea, vomiting, fever, focal neurological deficits, and an alteration of mental status
 - Loss of consciousness
 - Convulsions of the left upper and lower limbs
 - Mild ophthalmalgia

Conclusion

- When maxillary MRONJ extends to the maxillary sinus, active resection of the infected bone should be considered to prevent the spread of the infection beyond the maxillary sinus, to the ethmoid sinus, and into the brain

題號	題目
1	關於 MRONJ 的不包含下列何者? (A) 曾經服用 antiresorptive 類的藥物 (B) 現在正在服用 antiangiogenic 類的藥物 (C) 在頭頸部有發現有 exposed bone 超過八週 (D) 做過放射線治療
答案(D)	出處: Hindawi Publishing Corporation Case Reports in Dentistry Volume 2016
題號	題目
2	下列關於 brain abscess 何者錯誤? (A) The most common sites of cerebral abscesses are the temporal lobes (B) They may occur following cranial trauma, or craniomaxillofacial surgery (C) A dental infection that spreads to the brain generally causes a solitary brain abscess in the temporal lobe (D) The most common symptoms are headache, nausea, vomiting, fever, focal neurological deficits, and alteration of mental status
答案(C)	出處: M. Ben Hadj Hassine, L. Oualha, A. Derbel, and N. Douki, "Cerebral abscess potentially of odontogenic origin," <i>Case Reports in Dentistry</i> , vol. 2015, Article ID 267625, 4 pages, 2015