Superior Branch Palsy of the Oculomotor Nerve Caused by Rhinocerebral Mucormycosis

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Abstract

A 75-year-old woman presented with fever and right temporal, periorbital and facial pain for 7 days. Physical examination revealed an ipsilateral paresis of the superior division of the oculomotor nerve with mild exophthalmos. She also had hyperglycemia. CT scan of the paranasal sinuses showed acute sinusitis. Rhinoscopy demonstrated black necrotic tissue in the nasal septum. KOH preparation of tissue biopsy specimen revealed large, non septate hyphae with right angle branching, diagnostic of rhinocerebral mucormycosis. She was treated with amphotericin B, surgical debridement and insulin therapy. Surgical tissue specimen also confirmed mucormycosis. She improved after treatment, but 4 months later, ptosis and upward palsy still persisted.

Key word : Superior Branch Palsy, Oculomotor Nerve, Rhinocerebral Mucormycosis

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Isolated paresis of the superior division of the oculomotor nerve, producing ptosis and upgaze palsy, is relatively uncommon. Its etiologies are viral infection, intracavernous carotid artery aneurysm, diabetes mellitus, enlargement of the third ventricle, basilar apex aneurysm, surgical manipulation of the third cranial nerve, bacterial meningitis, lymphoma, cryptococcal meningitis, intrinsic brainstem diseases (infarction, multiple sclerosis and hemorrhage), acute leukemia and acute and chronic sphenoid sinusitis[1-10]. We herein report a case of rhinocerebral mucormycosis (RCM) with superior branch palsy of the third cranial nerve which, to our knowledge, has never been reported.

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CASE REPORT

A 75-year-old previously healthy woman was admitted to Srinagarind Hospital in June 1999 because of fever and severe right temporal, periorbital and facial pain for 7 days. She denied any history of nasal discharge.

Physical examination revealed a body temperature of 38.3°C. Physical and neurologic examinations were unremarkable except a mild exophthalmos and ptosis and paresis of the superior rectus muscle without chemosis of the right eye. The other extraocular movements, pupils and corneal reflex were normal.

Complete blood count showed white blood cells of 11,800 per mm^3 with 75 per cent polymorphonuclear cells, 22 per cent lymphocytes and 3 per cent monocytes. Blood glucose was 272 mg/dl. Blood urea nitrogen, creatinine, electrolytes and chest X-ray were within normal limits. A computed tomography with contrast enhancement of the paranasal sinuses revealed acute sinusitis of the right sphenoid, both ethmoid and the left maxillary sinuses with poor contrast enhancement of the right cavernous sinus. The extraocular muscles, optic nerves and orbits were apparently normal. Anterior and posterior rhinoscopy demonstrated black necrotic tissue in the nasal septum. Potassium hydroxide (KOH) preparation of the necrotic tissue revealed numerous large, non septate hyphae with right angle branching. Rhinocerebral mucormycosis (RCM) and diabetes mellitus was diagnosed. She was treated with amphotericin B (1 mg/kg/d), insulin therapy and surgical debridement. Operative findings revealed black necrotic tissue in the nasal septum invading the right inferior and middle turbinates, necrotic tissue in the left middle turbinate and bloody content in the left maxillary sinus. Right medial maxillectomy, septal resection, anterior ethmoidectomy by functional endoscopic sinus surgery were performed. Histologic examination of the nasal septum showed the characteristic nonseptate branching hyphae of Mucorales. Amphotericin B was given in a total dose of 1.5 g without renal impairment. Pain and exophthalmos gradually decreased. Ptosis and upward palsy of the right eye still persisted at 4 months follow-up. Repeated rhinoscopy showed only residual dead bone in the left nasal septum.

DISCUSSION

Rhinocerebral mucormycosis (RCM) is a fulminating, devastating fungal disease. Risk factors for the development of this disease include diabetes mellitus, neutropenia and immunosuppressive conditions. Typically, an airborne infection, primary disease is initiated in the upper or lower airways. Sinusitis is most common with direct extension of the infection to contiguous sites. The classic presentations are facial or periorbital pain and nasal discharge, rapidly followed by proptosis, visual loss, ophthalmoplegia, and chemosis. Inspection of the palate, nasal passages and posterior nasopharynx may reveal blackened or necrotic areas of infected mucosa and bone[11]. Diagnosis is established by histological examination of tissue biopsy specimen. The simplest method for early diagnosis is KOH preparation of tissue biopsy specimen, showing broad, non septate hyphae with right angle branching. Treatment includes amphotericin B or liposomal amphotercin B, aggressive surgical debridement and control of the underlying disease. Despite these therapies, overall mortality has been about 50 per cent. Two factors for determination of the outcome are early diagnosis and resolution of the risk factors.

The oculomotor nerve divides into superior and inferior divisions in the anterior portion of the cavernous sinus. Therefore, divisional paresis is classically localized either in the anterior cavernous sinus or in the posterior orbit. Nevertheless, divisional oculomotor paresis has been described in patients with lesions affecting the subarachnoid portion and intrinsic brainstem disease. Isolated paresis of the superior division, producing ptosis and upgaze palsy, is relatively uncommon.

In our case, isolated weakness of the right levator palpebrae and superior rectus muscle resulted from involvement of the superior branch of the ipsilateral third nerve by RCM. Although we did not find other cranial nerve involvement in cavernous sinus syndrome, the lesion was in the cavernous sinus, as demonstrated by CT scan.

As in this patient, RCM should be looked for in patients with superior branch palsy of the oculomotor nerve. Early treatment can prevent serious complications.

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REFERENCES

1. Derakhshan I. Superior branch palsy of the oculomotor nerve with spontaneous recovery. Ann Neurol 1978; 4: 478-9.
2. Feder R, Camp WA. Superior branch palsy of oculomotor nerve and pupillary constriction caused by intracranial carotid artery aneurysm. Ann Neurol 1979; 5: 493-5.
3. Masucci EF, Kurtzke JF. Diabetic superior branch palsy of the oculomotor nerve. Ann Neurol 1980; 7: 493.
4. Osher RH, Corbett JJ, Schatz NJ, Savino PJ, Orr LS. Neuro-ophthalmological complications of enlargement of the third ventricle. Br J Ophthalmol 1978; 62: 536-42.
5. Guy J, Savino PJ, Schatz NJ, Cobbs WH, Day AL. Superior division paresis of the oculomotor nerve. Ophthalmology 1985; 92; 777-84.
6. Chotmongkol V, Techasuknirun A. Superior division paresis of the oculomotor nerve caused by cryptococcal meningitis. J Med Assoc Thai 1992; 75: 548-50.
7. Ksiazek SM, Repka MX, Maguire A, et al. Divisional oculomotor nerve paresis caused by intrinsic brainstem disease. Ann Neurol 1989; 26: 714-8.
8. Navacharoen W, Limsukon P, Chaimongkol B. Superior branch palsy of the oculomotor nerve caused by hematologic malignancy. Chiang Mai Med Bull 1988; 28: 13-8.
9. Stefanis L, Przedborski S. Isolated palsy of the superior branch of the oculomotor nerve due to chronic erosive sphenoid sinusitis. J Clin Neuro-ophthalmol 1993; 13: 229-31.
10. Chotmongkol V, Chainunsamit S. Superior branch palsy of the oculomotor nerve caused by acute sphenoid sinusitis. J Med Assoc Thai 1999; 82: 410-3.
11. Wiles CM, Mackenzie WR. Fungal diseases of the central nervous system. In: Kennedy PGE, Johnson RT, eds. Infections of the nervous system. London : Butterworths, 1987: 93-117.

ความผิดปกติของแขนงบนของเส้นประสาทสมองคู่ที่ 3 ที่เกิดจากมิวคอร์มัยโคสิส

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รายงานผู้ป่วย 1 ราย เป็นผู้หญิงอายุ 75 ปี มีไข้และมีอาการปวดที่ขมับ รอบกระบอกตา และหน้าข้างขวามา 7 วัน การตรวจร่างกายพบตาขวาโปนเล็กน้อย หนังตาตก ตามองขึ้นข้างบนไม่ได้ ตรวจเลือดพบมีน้ำตาลในเลือดสูง การตรวจคอมพิวเตอร์สแกนของโพรงไซนัสของจมูก พบมีการอักเสบชนิดเฉียบพลัน การตรวจโพรงจมูก พบมีเนื้อตายสีดำที่ผนังกั้นโพรงจมูก การตรวจ KOH พบสายราขนาดใหญ่ที่ไม่มีผนังกั้นแบ่งเป็นช่องและแตกแขนงเป็นมุมฉากซึ่งเข้าได้กับมิวคอร์มัยโคสิส ผู้ป่วยได้รับการรักษาด้วยยาแอมโฟเทอริซิน บี การผ่าตัดและคุมเบาหวานด้วยอินซูลิน ผู้ป่วยมีอาการดีขึ้น การติดตามผลการรักษา 4 เดือนต่อมา ผู้ป่วยยังมีหนังตาตก ตามองขึ้นบนไม่ได้

คำสำคัญ : มิวคอร์มัยโคสิส, ความผิดปกติของแขนงบนของประสาทสมองคู่ที่ 3, ประสาทออคูโลโมเตอร์

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