Cryptococcic Granuloma in the Posterior Fossa

Arka Çukurda Kriptokoksik Granuloma

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Abstract: Cryptococcosis is a rare opportunistic fungal infection of the central nervous system that most frequently presents as meningitis or meningoencephalitis, and less frequently as a granulamatous mass lesion. A case of histopathologically confirmed cryptococcic granuloma who has undergone an operation with the diagnosis of posterior fossa tumor is reported.

Key Words: Amphotericin B, Cryptococcus neoformans, flucytosine, posterior fossa, toruloma

Özet: Kriptokokkozis merkezi sinir sisteminde nadir görülen fırsatçı bir mantar infeksiyonudur; en sık menenjit ve meningoensefalit, daha az sıklıkta granulomatöz kitle lezyonu olarak görülür. Arka çukur tümörü tanısı ile ameliyat edilen ve histopatolojik olarak kriptokoksik granüloma olduğu doğrulanan bir olgu bildirilmiş ve tartışılmıştır.

Anahtar Sözcükler: Amfoterisin B, arka çukur, flusitozin, Kriptokkus neoformans, toruloma

INTRODUCTION

Cryptococcosis is a rare opportunistic fungal infection of the central nervous system (2, 5, 10, 13, 18, 20, 21, 26) . Etiological agent of cryptococcosis Cryptococcus neoformans, was first demonstrated by Busso in 1894; later, in 1916 Stoddart and Cutler defined the lytic effect of the fungus in tissues and gave it the name of Torula histolytica (7) . Cryptococcosis infection is most frequently seen as a case of meningitis or meningoencephalitis, and it rarely presents as a granulomatous mass lesion (1-5, 9, 10, 13, 18, 20, 25, 26) . The occurence of isolated cryptococcal granuloma in the central nervous system was reported first by LeCount and Myers in 1907 (21)

CASE REPORT

A 54-year-old male patient who has admitted to another clinic by the complaints of headache, nausea, vomiting, and ataxia, was admitted to our clinic with the same complaints 2 weeks after his first admittance. In his first computerized tomography (CT), a right cerebellar hemispheric hypodense region, compressing the fourth ventricle and leading to ventricular shift had been detected and one week later a control CT had been suggested, in order to differentiate between an acute infarction and a glial tumor (Figure 1). Two weeks later at his first admittance to our clinic, the patient's complaints had got worse and his CT taken at that time showed a mass lesion in the posterior fossa which had enlarged, so the patient was hospitalized.

Neurological examination revealed bilateral horizontal nystagmus, bilateral papilledema, impaired cerebellar tests, truncal ataxia, dysmetria, dysdiadochokinesia. CT showed a nonenhancing, hypodense, 28-38 mm, midline posterior fossa mass lesion. The lesion was partially in the right cerebellar hemisphere, compressing the fourth ventricle and the cerebellopontine cisterns (Figure 2). During surgery,

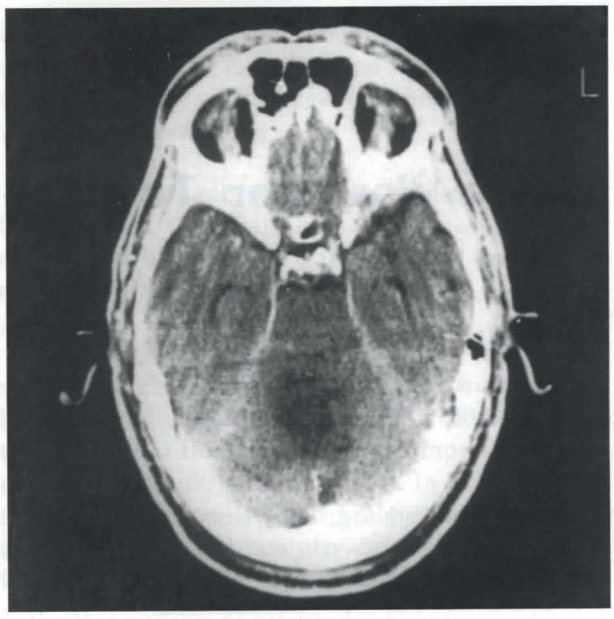

Figure 1: The first CT demontrates a right cerebellar hemispheric hypodense region, compressing the fourth ventricle and leading to cerebellar shift.

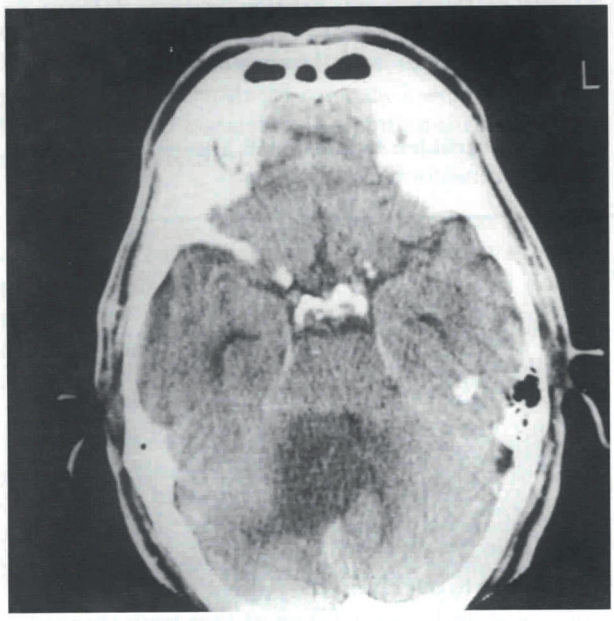

Figure 2: Control CT demontrates a mass lesion in the posterior fossa which has enlarged.

suboccipital craniectomy and C1-C2 laminectomy were performed. The yellow pinkish colored soft tumoral tissue, resembling glial tissue, occupying the fourth ventricle, and extending into the right cerebellar hemisphere, was subtotally resected. The patient got worse in the postoperative period. The control CT taken at that time showed thin shallow hematoma in the tumor lodge, and intraventricular

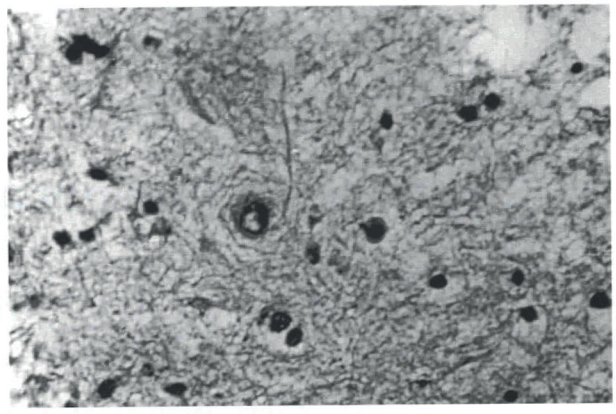

Figure 3: Histopathological section demonstrating basophilic stained cryptococci, some having capsules, in the cerebellar cortex. (H&E, X200)

and cisternal air. Patient died the day after the operation as his general status got worse. Histopathological examination revealed basophilic stained cryptococci, about 20 microns in diameter, some having capsules in the cerebellar cortex, mostly in molecular layer to a lesser extent in the granular layer. Diagnosis was confirmed as cryptococcosis (Figure 3). Since the patient died we could not perform tests for immune deficiency syndromes and autopsy was not permitted either.

DISCUSSION

Cryptococcosis or Torula infection is a rare opportunistic fungal infection of the CNS. It is widely seen all around the world as sporadic cases (2, 5, 10, 13, 18, 20, 21, 26) . While 50 % of cryptococcosis patients are healthy individuals, one half of the patients with disseminated cryptococcosis have a predisposing condition such as sarcoidosis, lymphoreticular malignant disease, a history of corticosteroid therapy or AIDS (11, 15, 17, 21, 25) . Since the patient died we could not perform tests for immune deficiency syndromes. Age range is between 4 and 72, with a median age of 42, and it is 3 times more frequently seen in males (10, 11) . Our case was a 54 years old male . Cryptococcosis is frequently seen in people dealing with stockbreeding (10, 11). Cryptococcus neoformans is usually found in pigeons which are the main reservoirs for transporting this disease to humans (10, 17) as an airborn infection (10, 15). The infection is primarily seen in the lungs, then hematogenous dissemination develops. CNS is most frequently involved (7, 11, 18, 19) . In addition to lung and CNS lesions papule, pustule, nodule and ulcerated skin lesions,

lymphadenopathy and osteolytic lesions in the bones are also observed (7). Cryptococcus infections are most frequently encountered in the form of meningitis, meningoencephalitis or hydrocephalus (2-5, 9, 10, 13, 18, 20, 23, 26). Rarely, as in our case, it presents as a granulamatous mass lesion (5, 10-12, 18) . The incidence of cryptococcic granuloma is reported as 11-25 % (16, 19).

When the diagnosis of cryptococcosis is initially established, 70 % of the patients have neurological manifestations. At necropsy 90 % of patients have lesions in the CNS (12, 18, 25). Intracerebral granulomas show the characteristic symptoms of an expanding intracranial mass. Meningitis is seen in 60 % of the cases (10-12, 22). The duration of the neurological symptoms in the patients with cryptococcic granuloma range from one week to 6 years (average 10 months) (21). This was two weeks in the case we reported. When meningitis is present, the cerebrospinal fluid reveals typical fungal meningitis (6, 10) . In CSF cryptococcal antigens can be detected by the latex agglutination test; 1/8 titration is positive, 1/256 titration heralds good prognosis (4, 9, 10, 14, 22, 23). The latex agglutination test has value in differentiating this disease from other fungal infections and tuberculosis. In 50 % of the cases CSF is india ink positive (10, 14, 15, 25, 26).

Cryptococcic granuloma may appear hypodense or isodense and show ring or nodular enhancement in CT but the findings are not specific enough to be differentiated from other infection-inflammatory, vascular or neoplastic disorders (8, 11, 12, 14, 16, 18, 19, 23-25). The reported incidence of cryptococcal mass lesion is 11-25 % (16, 23). Cryptococcic granuloma enhance with contrast agent in MRI (17, 25).

In normal hosts, cryptococcus neoformans usually induce a chronic granulomatous reaction. Immunosuppressed patients may display virtually no inflammatory reaction, and gelatinous masses of fungi may develop. Infection may extend from the basal cisterns through the brain substance via the perivascular spaces (Virchow-Robin spaces), producing multiple small cysts filled with the organism. These lesions have been termed "soap bubble" lesions or " gelatinous pseudocysts" and may preceed the formation of granulomas (6, 12, 19).

The differential diagnosis includes other fungal infections, tuberculosis, cytomegalovirus infections, cysticercosis, echinococcosis, neoplasms, lymphoma, progressive multiple leucoencephalopathy, pyogenic abscess, vascular lesions, and infarction (12, 19, 25).

Treatment of cryptococcic granuloma consists of surgical and systemic therapy. Surgical intervention is carried out either for excision of the granulamatous lesion as in our case or for V-P shunt or external drainage of hydrocephalic cases. Systemic treatment should be used concomitantly after the excision of the lesion (2, 3, 5, 10, 11, 13, 20, 21, 24). Systemic treatment must comprise high amphotericin B levels like 1-3 g/day, and if necessary the intratechal, intraventricular or intracavitary routes are also used. CNS penetration of the drug is low. Flucytosine as a single drug is not an antifungal agent but if combined with amphotericine B, good results can be obtained in 6 weeks for cryptococcic infections (2-4, 9, 10, 15). Before the use of amphotericine B for the first time in 1956, Cryptococcosis was almost always fatal, but recently mortality declined to 15-40 % (3, 5, 9, 15, 20). Imidasoline derivative antifungal drugs like miconazole and ketoconazole can be used if Amphotericine B is insufficient or has adverse side effects (2, 10).

In conclusion, particularly in immunocompromised patients with cranial mass lesions, cryptococcic granuloma must be considered in differential diagnosis.

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