BRAIN ABSCESSION - A RARE COMPLICATION OF BRONCHIECTASIS

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Abstract:
A 25 year old male presented to us with clinical features suggestive of meningitis with raised intracranial tension. He had bronchiectasis for the past 5 years. MRI brain revealed a single cerebral abscess in the right temporo-occipital region.

Keyword: Brain abscess, Bronchiectasis, Headache, Neck stiffness, Antibiotics, Burr hole

CASE REPORT:
A 25 year old male presented to the hospital with history of headache and vomiting for past 1 week. He also gave history of high grade fever for the past 2 days. History of recurrent respiratory infection was present since childhood with yellowish sputum production and blood staining in the sputum for past 1 month. He gave history of breathlessness of grade 2 which was slowly progressive for the past 5 years. There was no history of head injury, ear discharge, chest pain, pedal edema and weakness of limbs. He was known to have bronchiectasis for the past 5 years on antibiotic prophylaxis as and when needed.

He was also evaluated for massive splenomegaly in a private set up. No past history of pulmonary TB, bronchial asthma, heart disease and seizures. No family history of pulmonary TB or bronchiectasis. His parents died in an accident and he was under the care of his uncle. He had smoking habit from 13 yrs of age and an occasional alcoholic quitted 5 years back. He was unmarried. He denied history of premarital contact. He was an auto driver by occupation. On examination, he was febrile, moderately built and nourished. He had pallor and grade 3 pandigital clubbing. There was no significant lymphadenopathy. Temperature was 102F, pulse 110/min, BP 110/70 mmHg and respiratory rate 18/min. On neurological examination he was conscious, oriented with no speech disturbances and there was no papilledema. Power was 5/5 in both sides of the body with bilateral plantar flexor. Neck stiffness was present. Results of CT brain fig(1) and then MRI brain fig(2) were highly suggestive of cerebral abscess in the right temporo-occipital region.
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Ceftriaxone 2 gm i.v. every 12th hourly, vancomycin 2gm i.v. every 12h hourly and later on amikacin 750mg i.v. once daily was added. He also received dexamethasone and mannitol. The next day a burr hole of the right occipital region was done and about 20 ml of thick yellowish pus was evacuated. Pus culture was negative for pyogenic bacteria, acid-fast bacillus, anaerobes and fungi. The same antibiotic was continued for 3 weeks. Repeat CT brain showed reduction in the edema and size of the lesion. Headache and neck stiffness was decreased. He was afebrile and discharged on 23rd day with no neurological sequelae. He was on regular follow up. In this case the infected bronchiectasis was the only focal infection detected. In the meanwhile we evaluated him for massive splenomegaly. USG abdomen showed splenomegaly of size 16.6cm. Portal Doppler showed portal hypertension and he had grade 3 oesophageal varices on upper GI endoscopy. Peripheral smear showed normocytic hypochromic anemia with decreased platelets. Bone marrow examination was normal. Viral markers were negative. Ultimately diagnosed as non cirrhotic portal fibrosis (NCPF) as the cause for massive splenomegaly with hypersplenism explaining the mild anemia and thrombocytopenia.

**DISCUSSION:**
A brain abscess may develop by direct spread from a contiguous cranial site of infection, such as paranasal sinusitis, otitis media, mastoiditis, or dental infection; following head trauma or a neurosurgical procedure; or as a result of hematogenous spread from a remote site of infection. Half of hematogenous abscesses (10-15% of the total) are due to chronic pulmonary

**fig(1) CT BRAIN showing brain abscess in right temporo-occipital region.**

**fig(2) MRI BRAIN showing brain abscess with well formed capsule.**

Complete blood count revealed a hemoglobin of 11gm% and platelets of 80,000/µl, other parameters was normal. Renal and Liver function tests were normal. Sputum culture showed klebsiella pneumoniae sensitive to amikacin and sputum AFB was negative. Chest X ray and then HRCT chest showed right middle and lower lobe bronchiectatic changes.

**fig(3) HRCT CHEST showing bronchiectatic changes in right lower lobe** He was immediately started on empirical i.v.antibiotics in the form of

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infections including bronchiectasis. But the incidence of brain abscess secondary to bronchiectasis have drastically come down in the post-antibiotic era. Most of these abscesses originating from bloodborne infection lie within the territory of the middle cerebral artery and are often located near the junction between the cortex and the subcortical white matter and their capsule is usually poorly formed. The microbiology of hematogenous abscesses is dependent on the primary source of infection. The classic clinical triad of headache, fever, and a focal neurologic deficit is present in <50% of cases. The most common symptom in patients with a brain abscess is headache, occurring in >75% of patients. Other early symptoms, roughly in order of their frequency, are drowsiness and confusion; focal or generalized seizures; and focal motor, sensory, or speech disorders. Fever and leukocytosis are not consistently present. MRI is better than CT for demonstrating abscesses in the early cerebritis stages and is superior to CT for identifying abscesses in the posterior fossa. Before the abscess has become encapsulated and localized, antimicrobial therapy, accompanied by measures to control increasing intracranial pressure, is essential. Once an abscess has formed, surgical excision or drainage combined with prolonged antibiotics (usually 4-8 wk) remains the treatment of choice. With the introduction of antimicrobics and the increasing availability of imaging studies, such as CT scanning and MRI, the mortality rate has decreased to less than 5-15%. Rupture of a brain abscess, however, is associated with a high mortality rate (up to 80%). Permanent neurological damage may include hemiparesis, cranial nerve palsy, hydrocephalus, intellectual and behavioral disorders, ataxia, spasticity, visual defects, and optic atrophy. Recurrent seizures develop in about 10-30% of survivors. The frequency of neurological sequelae in persons who survive the infection varies from 20-79% and is predicated on how quickly the diagnosis is reached and antibiotics administered. In our case the diagnosis was made properly and timely, the patient was started on wide spectrum i.v. antibiotics, the abscess was drained and he improved well with no neurological sequelae.

CONCLUSION:
In conclusion, this case illustrates that bronchiectasis can have fatal complications like cerebral abscess. Even in the era of advanced diagnosis and effective treatment of bronchiectasis, brain abscess do occur due to metastatic spread and it carries very high mortality rate. Awareness of this complication and identification of its early symptoms and signs, and rapid initiation of aggressive treatment like in our case is the most effective method in saving lives.

REFERENCES:
1 Harrison’s Principles of Internal Medicine, 18th edition, Chapter 381.
3 Crofton And Douglas’s Respiratory Diseases, 5th edition, Chapter 28.

