CASE REPORT

INTRACRANIAL METASTATIC NEUROBLASTOMA MIMICKING SUBDURAL EMPYEMA: AN INTERESTING CASE

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Abstract

Neuroblastoma is usually presented with abdominal distension. However, central nervous system manifestations of neuroblastoma are uncommon. In this case report, patient presented with uncommon presentation of neuroblastoma and the diagnostic dilemma.

Keywords: Neuroblastoma, Central Nervous System, Metastasis

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Introduction

Neuroblastoma is the third most common malignancy in children after leukemia and primary CNS brain tumors. It accounts for 10–15% of childhood malignancies [1]. The primary tumor commonly arises in the adrenal gland or along the sympathetic chain, usually in the abdomen.

Metastases are present in up to 70% of patients with neuroblastoma at the time of diagnosis [1]. Secondary craniocerebral neuroblastoma manifests most often as osseous metastases involving the calvarium, orbit, or skull base. Metastatic CNS neuroblastoma may also occur anywhere in the CNS as a parenchymal, intraventricular, or spinal cord mass.

Case Report

A 2-year old boy presented with 3 weeks of high grade fever history associated with the loss of appetite and lethargy. He was treated with 2 courses of antibiotics. However, symptoms are not improving. In the ward, he developed bilateral orbital swelling. Computed tomography (CT) brain and Magnetic resonance imaging (MRI) brain was performed and diagnosed as subdural empyema. Later, he was referred to neurosurgical team and craniotomy was done. Histopathological examination (HPE) of extradural tissue reveals malignant small round blue cells tumour with differentials of PNET WHO grade 4 or metastatic malignant round blue cells tumour. This most likely represented metastatic malignant round blue cells tumour.
CT scan of thorax, abdomen and pelvis was performed to look for primary site and for staging. Currently patient is still undergoing chemotheraphy.

**Figure 1.** Contrast-enhanced CT brain shows enhancing nodular lesion in subdural region with area of hypodensities. The visualized brain parenchyma is normal.

![Contrast-enhanced CT brain](image1)

**Figure 2.** Contrasted MRI brain also shows similar lesion as in CECT brain. The lesion is enhancing with area of hypointensities.

![Contrasted MRI brain](image2)

Based on this CT brain and MRI brain, he was treated as subdural empyema.
Figure 3. Contrast-enhanced CT thorax and abdomen shows enhancing soft tissue mass along the paravertebral thoracic region and abdomen with area of calcification.

Figure 4. Contrast-enhanced CT brain at the level of orbits shows involvement of bilateral orbit.
**Discussion**

Patient usually presented with abdominal distension. Metastases of neuroblastoma are often seen during recurrence of disease. However, up to 60% of cases were present during the time of diagnosis [2]. CNS metastasis account for 14% of metastasis after skeleton, regional lymph nodes and liver respectively [2]. CNS metastasis of neuroblastoma can occur in the calvarium, orbit, dura, meningeal and brain parenchyma. Bony metastasis of neuroblastoma is characterized by ill defined lytic lesion with mottling appearance [3]. Extension of epidural deposits along the suture can cause erosion of the suture thus causing suture diasthesis [3]. Neuroblastoma has a predilection to metastasis to the dura, usually on the external surface over the convexities of the skull. Dural metastasis can be a brain barrier for direct invasion of intraparenchyma. Brain parenchyma involvements are extremely rare and usually occur in disseminated disease [4]. Patients can also present with periorbital soft tissue hematomas as the initial manifestation of CNS involvement of neuroblastoma [4]. CNS involvement in patients with neuroblastoma is associated with poor prognosis. Early detection and aggressive treatment may allow some patients to live longer.

As in this patient, he was initially diagnosed as dural empyema as clinically suggestive and the brain CT scan and MRI also showed subdural collection. However, the diagnosis was changed after the dural biopsy was done which later revealed that the dura lesion was the metastatic lesion of neuroblastoma. The neuroblastoma was confirmed in the primary site along the sympathetic chain of paraspinal region involving the thoracic and upper abdomen region.

This case report highlighted the uncommon presentation of neuroblastoma with diagnostic dilemma during the initial presentation of patient to hospital. Neuroblastoma has diverse manifestation including mimicking central nervous system...
diseases. This disease must always be considered in children with unexplained neurologic presentation as it will lead to early diagnosis and early initiation of treatment.

References


