coincidental, the temporal profile of the occurrence of these pathologies, as well as the anatomical relationship between the neurocysticercosis and neoplasm in the present case, suggests that parasitic infection may have contributed to the malignant transformation of the astrocytic tumour. Genetic factors may also have been involved, because the present patient had Turcot syndrome. Further genetic analysis is necessary to address these important issues.

4. Conclusions

We presented a patient with anaplastic astrocytoma and Turcot syndrome who subsequently developed neurocysticercosis and anatomically associated malignant transformation to glioblastoma. Intraoperative findings and histological examinations suggest that the neurocysticercosis formed a border between the neoplasmic lesion and normal brain tissue and was present only around the neoplasmic lesion. This parasitic infection and/or genetic factors may have triggered the malignant transformation of the astrocytic tumour.

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Extracranial metastases of a supratentorial primitive neuroectodermal tumour

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Abstract

Extracranial metastases from primary central nervous system (CNS) tumours have rarely been reported in the literature, and glioblastomas and medulloblastomas constitute the majority of these. The tendency of supratentorial primitive neuroectodermal tumours (PNET) to spread within the CNS is well-known, but few cases of extracranial metastases of supratentorial PNET have been reported. We report a 29-year-old man with a supratentorial PNET, which metastasized to his vertebral bodies and lung.

Keywords: Supratentorial; Primitive neuroectodermal tumour; Extracranial; Metastases

1. Introduction

The term primitive neuroectodermal tumour (PNET) was first introduced in 1973 by Hart and Earle to describe an embryonal neoplasm arising outside the cerebellum that was morphologically similar to medulloblastoma.[1] PNETs may occur anywhere in the central nervous system (CNS), and these embryonal tumours can be classified according to their location: infratentorial PNETs are classified as medulloblastomas; PNETs of the pineal region are classified as pineoblastomas; and PNETs of the supratentorial space are generally classified as supratentorial PNETs.[2,3]

Supratentorial PNETs are uncommon malignant neoplasms, accounting for approximately 2.5% of childhood brain tumours and 0.46% of those in adults.[4] Because of

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their low incidence, information about treatment results and prognostic factors for supratentorial PNETs is limited.[5] Supratentorial PNETs are known to seed frequently within the CNS,[3,4] but few cases of extracranial metastases of supratentorial non-pineoblastoma PNET have been reported.[6–8] We report a young male patient who had supratentorial PNET-derived extracranial metastases involving the lung as well as the vertebral bodies.

2. Case report

In March 2003, a 29-year-old man with a 2-month history of headache, nausea, and vomiting was admitted to hospital. The patient had bilateral papilloedema, but no other neurological abnormalities. Magnetic resonance (MR) studies revealed a huge mass with an irregular margin in the right thalamic region, which was partially enhanced with gadolinium (Fig. 1). A right parietal craniotomy and subtotal tumour removal was performed. A dark, ill-defined, and highly vascularized tumour was found. On pathological examination, the tumour's appearance was found to be consistent with it being a supratentorial PNET. After surgery, the patient received five courses of chemotherapy, including nimustine hydrochloride, cisplatin, and vincristine sulfate every 3 weeks.

In December 2003, the patient presented with an acute-onset headache and left-side motor weakness. Computed tomography (CT) scanning showed tumour bleeding and severe brain oedema. Emergent craniectomy and haematoma removal were performed. The patient's postoperative recovery was good. In February 2004, the remnant tumour was treated with fractionated stereotactic radiosurgery using the Novalis system (dedicated LINAC; BrainLAB AG, Germany). The patient was treated using 35 Gy radiation in daily doses of 5 Gy. However, in June 2004, the patient underwent another subtotal tumour resection, because the remnant mass had increased in size. On pathological examination, the specimen was confirmed to be tumour, not radiation necrosis. The patient's postoperative course was uneventful.

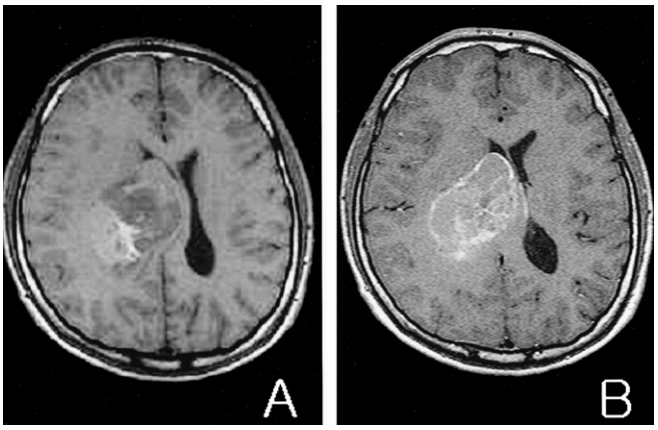

Fig. 1. T_1-weighted axial MRIs. (A) A 6×4 cm mass in the right thalamic area can be seen, which compressed the right lateral ventricle. (B) Gadolinium produces inhomogeneous, ring-like enhancement.

In January 2005, the patient complained of neck pain and worsening left side motor weakness. Whole spine MR studies revealed multiple spinal metastases, including the C4, T6, L2, and L5 vertebral bodies (Fig. 2). A fractured C4 vertebral body was displaced posteriorly, compressing the cervical spinal cord. Chest radiography revealed multiple consolidations and infiltration in both the parahilar and the lower lung fields. Enhanced CT scan of the chest revealed multiple nodules and poorly defined nodular infiltration in the parenchyma of both lungs (Fig. 3). We

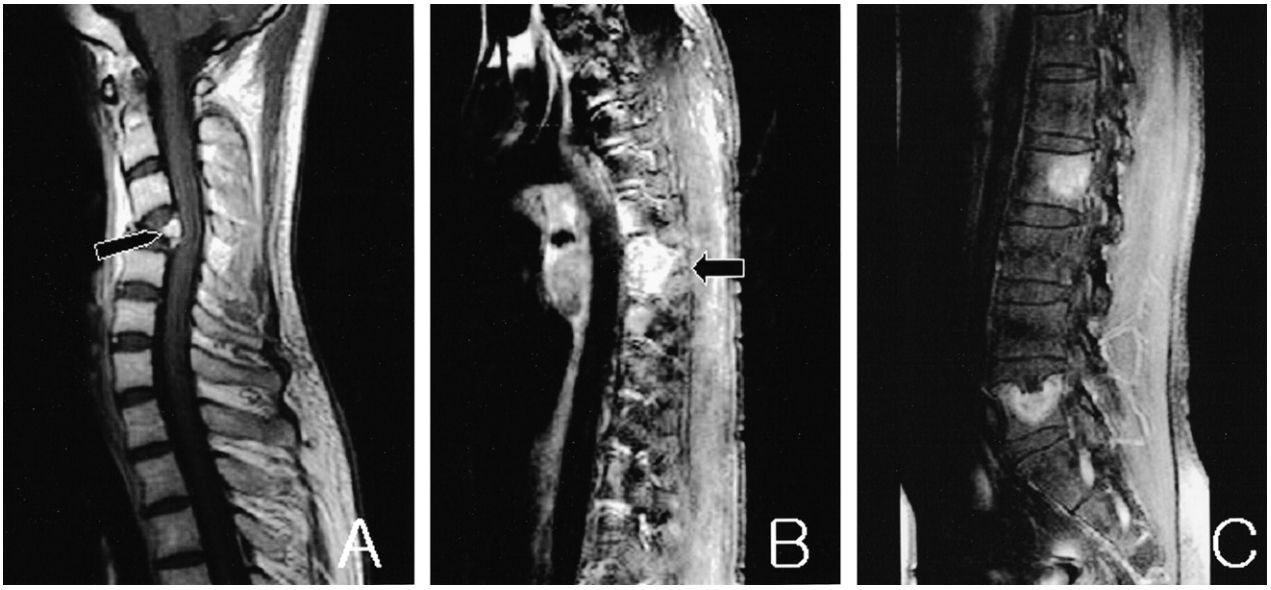

Fig. 2. (A) Sagittal gadolinium-enhanced cervical spine MRI showing that the C4 body (arrow) is severely collapsed, displacing it posteriorly and compressing the spinal cord. (B) Sagittal gadolinium-enhanced thoracic MRI shows strong enhancement of the T6 vertebral body (arrow). (C) Sagittal gadolinium-enhanced lumbar MRI reveals localized enhancement in the L2 and L5 vertebral bodies.