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Short report

Primary intracranial choriocarcinoma

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SUMMARY Two cases of primary intracranial choriocarcinoma are reported. One patient died with raised intracranial pressure and pulmonary metastases whereas the second patient, who was diagnosed early, has remained well a year after chemotherapy. Human chorionic gonadotrophin level estimation in serum and cerebrospinal fluid is a useful marker in suspected cases, and chemotherapy following biopsy appears to be the treatment of choice.

Choriocarcinoma comprises a relatively small but important group in the field of intracranial neoplasms;[1 2] the commonest site of origin is either in the pineal or parasellar regions.[3] In the last ten years management of extracranial choriocarcinoma has radically changed and the prognosis has improved with chemotherapy.[4] Intracranial choriocarcinoma may well respond to similar therapy, and therefore these neoplasms must be differentiated from other tumours occurring more commonly at these sites. This paper reports two cases of primary intracranial choriocarcinoma, the main purpose being to emphasise the importance of early diagnosis and the beneficial effect of chemotherapy.[5 6]

Case reports

Case 1

A 12-year-old Libyan girl was admitted in 1974 with a one month history of left temporal pain of sudden onset, loss of vision in the left eye, drooping of the left upper eyelid, and a disturbance of gait. Five days prior to admission she had lost vision in the right eye. On admission she was drowsy but rousable, irritable, dysarthric, and ataxic. There was complete blindness of the left eye but some perception of light was retained in the right eye. The pupils were fixed and dilated and bilateral ophthalmoplegias were also present. In addition, there was some evidence of a left trigeminal, and facial nerve disturbance. All four limbs were hypotonic with associated hyporeflexia. Investigations included bilateral carotid angiography, which revealed a parasellar tumour with an abnormal circulation; vertebral angiography showed that the basilar artery was displaced away from the clivus by a large mass.

A left frontal craniotomy was carried out and a highly vascular tumour was found encircling the optic nerves and internal carotid arteries. It clearly extended into the cavernous sinuses and down anterior to the brain stem. The optic nerves were decompressed with partial removal of the tumour. Histology of the small pieces of haemorrhagic tissue showed that the tumour consisted of sheets of polyhedral cells and syncytium, reminiscent of chorionic epithelium (fig a). The nuclei were hyperchromatic, pleomorphic and some very bizarre giant cells were present. A diagnosis of choriocarcinoma was made and at a later date the immunoperoxidase technique demonstrated the presence of human chorionic gonadotrophin in the cytoplasm. The patient was gravely ill, and no further investigations were carried out; she died within five days of admission. At necropsy, the body was that of a well built 5′ 2″ tall, slim young girl with normal external genitalia. Within the cranium there was a large haemorrhagic mass that almost completely occupied the pituitary fossa and extended into the cavernous sinuses on either side, encircling the internal carotid arteries and compressing the optic chiasm, the lesion partly extended into the third ventricle. Multiple haemorrhagic nodules of metastatic tumour were present throughout the lungs, the largest measuring 1 cm in diameter. Further careful examination revealed no evidence of a neoplasm in the ovaries, uterus or cervix. Histologically, the parasellar tumour and the metastatic nodules were similar to that described in the biopsy specimen. It was therefore concluded that the diagnosis was that of a primary parasellar choriocarcinoma with pulmonary metastases.

Case 2

A 17-year-old English male was admitted in January 1984 with a two week history of headaches of increasing sever-

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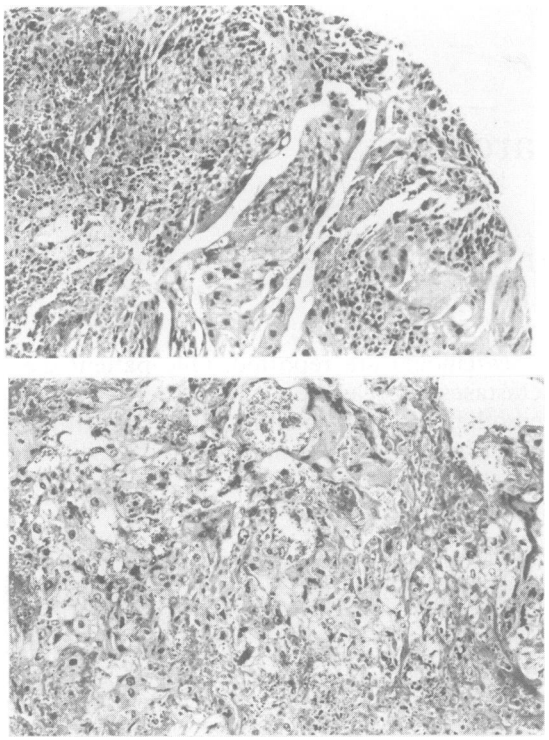

Fig *(a) Syncytium of small and large cells with bizarre nuclei (Haematoxylin and Eosin × 250.) (b) Highly vascular tumour with pleomorphic large nuclei and some cells showing clear cytoplasm. (Haematoxylin and Eosin × 250.)*

ity, some right sided visual blurring and episodic drowsiness. Subsequently, the patient became more drowsy with associated anorexia and vomiting. On examination he was a large, hirsute youth who was drowsy but rousable and orientated, with significant neck stiffness, bilateral papilloedema, poorly reacting pupils, a defect of upward gaze, and poor eye convergence. The CT scan showed marked hydrocephalus and an enhancing mass in the pineal region. A ventriculo-peritoneal shunt was inserted but after some initial improvement the patient's level of consciousness deteriorated. A further CT scan showed normal ventricles but an increase in the size of the tumour, the appearances indicating that haemorrhage had occurred into the tumour. An emergency occipital craniotomy was then carried out and a highly vascular and partly haemorrhagic tumour of the pineal region was almost completely removed. Some tumour remnants firmly attached to the Great Vein of Galen were left behind.

Subsequent histology with haematoxylin and eosin stain showed a vascular tumour composed of sheets of cells with highly pleomorphic nuclei and multi-nucleated giant cells, indicating a diagnosis of choriocarcinoma (fig, b): other elements of a teratoma were not seen. Immunoperoxidase preparation using the human chorionic gonadotrophin antibodies showed the presence of brown granules in the cytoplasm, confirming the light microscopic diagnosis. Subsequently, human chorionic gonadotrophin and alpha-feto protein levels in the serum and cerebrospinal fluid were estimated. The serum human chorionic gonadotrophin rose to 3378 IU whereas the CSF level was 10,200 IU/l, and alpha-feto protein was normal.

Following surgery, the patient's level of consciousness improved but there were still residual abnormalities affecting the pupillary reactions and external occular movements. He was transferred for chemotherapy to Dr Rustin, Charin Cross Hospital. The serum human chorionic gonadotrophin level began to fall during treatment and he was ultimately discharged home. Further assessment over the next year showed increasing resolution of his neurological signs, although convergence remained poor. One year after surgery, the patient remained well and independent with no clinical or radiological evidence of tumour activity, this being confirmed by a normal range of tumour markers.

Discussion

It is evident that early diagnosis could not be established in the first case and the patient's condition deteriorated before appropriate therapy could be instituted. A rapidly-growing vascular neoplasm at that site could have raised the suspicion of a diagnosis and human chorionic gonadotrophin levels should have been carried out. There were no other criteria such as precocious puberty, hypopituitarism of diabetes inspidius to suggest hypothalamic disturbance. As shown by necropsy, the extracranial metastases had already occurred in the lungs; this is a relatively rare phenomenon. Choriocarcinoma is notorious for its ability to metastasise, such metastases usually being blood-borne. However, a careful search for a primary site, especially in the ovaries, uterus or testicles should be carried out before accepting the intracranial tumour as the primary site. Dr Rustin of the Charing Cross Hospital suggests that metastatic tumours may also respond to chemotherapy in the same way as primary tumours do,[4] and appropriate therapy should be offered to these patients. The second patient was diagnosed at a relatively early stage and was referred for further management; his subsequent satisfactory progress reflected the efficacy of chemotherapy. Hirsute features in this case can possibly be attributed to an actively secreting tumour[6] and the high level of human chorionic gonadotrophin in the cerebrospinal fluid compared with the serum level could be explained on the basis of a direct communication between the tumour and the CSF pathway.[7]

Biological markers may prove to be of great value in non-germinomatous germ cell tumours, but diagnosis could not be based on these investigations alone and, where possible, a biopsy specimen should be obtained to rule out a mixed neoplasm, to iden-

tify the characteristic light microscopic appearances and to obtain further information by using immunoperoxidase techniques. There remains controversy about the treatment of pineal region tumours. While radiotherapy is mandatory for germinomas, chemotherapy is the treatment of choice for choriocarcinoma; as the latter treatment may be potentially curative, early diagnosis is essential so that appropriate therapy can be commenced.

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