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Secondary Primitive Neuroectodermal Tumour (PNET) after combined treatment for suprasellar germ cells tumor

Amedeo Calisto[1], Meharpal Sangra[1], Jairam Sastry[2], Jennifer Brown[1]

[1] *Department of Neurosurgery, Royal Hospital for Sick Children, Glasgow, United Kingdom*

[2] *Haemato-Oncology Unit, "Schiehallion" Ward, Royal Hospital for Sick Children, Glasgow, United Kingdom*

The late occurrence of a secondary brain tumour with a different histology after treatment for a primary intracranial neoplasm is a rare event. Where reported in the literature, it is usually as a late sequelae of cranial irradiation. Outside the CNS it has been reported that teratomas can undergo malignant transformation to PNETs[1] and that such transformations can be clonally related to the parent tumour[2].

We report the case of a 10-year old child in whom the diagnosis of a germ cell tumour (GCT) was made on the basis of tumour cell markers. Four years after successful treatment of her primary disease a PNET occurred outwith the site of her first tumour but within the field of previous irradiation.

While it is postulated that such tumours can be induced as a consequence of radiotherapy, the short duration to occurrence in this patient, as well the absence of any similar report (intracranial PNET after GCT) in the literature undermine this hypothesis.

Despite extra-cranial PNETs represent a very different pathology from intra-cranial PNETs, and despite not previously being reported, the possibility that a secondary intracranial PNET might be related to a pre-existing intracranial GCT, with some relation to cisplatin-derived agents, seems attractive and not totally unfounded. The control obtained in this case on the primary disease with respect to PNET growth in the meantime, does not invalidate this theory, provided that metastases can occur away from common spreading pathways.

Recognizing somatic-type components of GCTs is important, as they are typically resistant to the traditional platinum based chemotherapy regimens used for such tumours. Further investigation needs extensive molecular and genetic profile comparison between the two neoplasms, supporting the need for tissue sampling before starting chemo and radiotherapy.

References:

[1] Am Jof Cl Oncology. 36(6):535-539, Dec 2013

[2] Am Surg Path Vol36 No12 Dec 2012