



Pineal Region Brain Tumour Treatment Revisited: A Case Report

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ABSTRACT

Pineal region tumours may affect only a relatively small subset of neurosurgical patients, but they present enormous surgical challenge to the neurosurgeon due to their inaccessibly deep locations and compounded by the complex surrounding neurovascular structures. We present a case report of a patient who had combination chemoradiation without histological diagnosis but had complete tumour regression. Cyclical combination chemotherapy with cisplatin, etoposide and bleomycin and radiotherapy followed pre- chemoradiation ventriculo-peritoneal shunt insertion for obstructive hydrocephalus. The patient's clinical condition improved following the ventriculo-peritoneal shunt insertion as walking became re-established. Post – chemoradiotherapy cranial CT scan showed complete tumour regression. Tissue diagnosis may allow for precise, targeted management of pineal region tumours. However, in the absence of facilities which enable safe neurosurgery, resorting to the traditional chemo-radiation is still a viable alternative.

Key words: Pineocytoma, Hydrocephalus, Chemotherapy, Radiotherapy

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INTRODUCTION

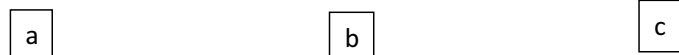
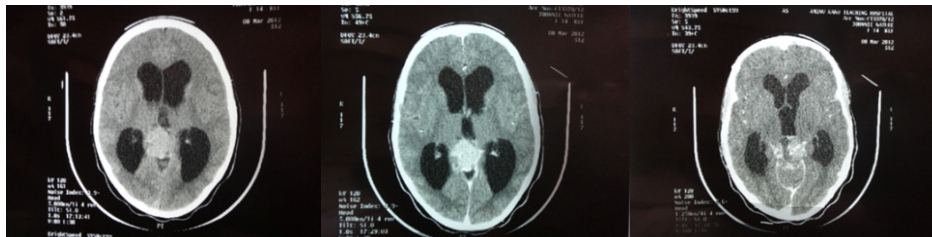
Pineal region tumours are derived from cells located in and around the pineal gland [1]. They represent 1% of all brain tumours with about 0.4 – 1% in adults and 3.0 – 8.0 % in children [1, 2]. Most children present the condition between 10 – 20 years of age with the average age being 13 years old [1]. In the early part of the last century, pineal region surgery had poor outcomes with operative mortality rates approaching 90% [3]. Traditional or conservative treatment involves shunt operation for hydrocephalus or radiotherapy without histological confirmation [2]. Current management involves individualized therapy based on correct pathologic diagnosis, as advance of microsurgical technique and stereotactic procedures has changed the empiric management [4]. Presently, surgical management is the standard treatment for most children with pineal region tumours. But microsurgical, endoscopic and stereotactic facilities may not be readily available in certain climes of the world like ours in Nigeria. This

report present a case managed with chemotherapy and external beam radiotherapy without histological diagnosis to assess clinical response in the absence of the benefits and morbidities of surgical care.

CASE REPORT

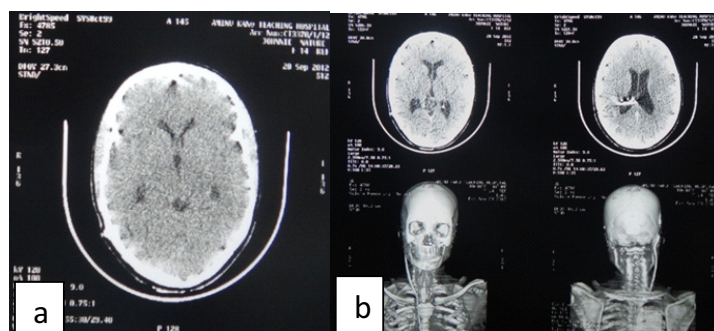
A 14-year old girl with a syndrome of raised intracranial pressure with recurrent headaches for 1 year had progressive visual loss with paraparesis. The brain Computed Tomography scan was consistent with Pineocytoma and obstructive hydrocephalus. Serology was negative for alpha-fetoprotein and beta-human chorionic-gonadotropin. She was prepared for, and underwent ventriculo-peritoneal shunt insertion. A month following surgery, she commenced a 3-course chemotherapy consisting of cisplatin, etoposide and bleomycin with whole-brain irradiation. At follow up a month after surgery revealed the ability to walk unaided. There was regression of the tumour six months post chemoradiation as seen in the figures 1 and 2 below.

FIGURE 1: PREOPERATIVE CRANIAL CT SCAN IMAGES OF THE PATIENT



a. Non-contrast image showing an isodense pineal tumour with dilated lateral ventricles b. Contrast image showing enhancement of pineal tumour, and c. image showing a small associated cystic component of the tumour.

FIGURE 2: POST-CHEMORADIATION CRANIAL CT SCAN IMAGES OF THE PATIENT



a. Image showing resolution of the pineal tumour, and b) image showing ventriculoperitoneal shunt in situ.

DISCUSSION

The case presented with the usual common lesions within the pineal region that included signs of obstructive hydrocephalus characterized by headache, nausea, vomiting and difficulty in walking due to blockage of the cerebral aqueduct and diplopia. These signs are classical of syndrome of raised intracranial pressure from direct effects of hydrocephalus [5]. During the course of evaluation, our patient only underwent cranial CT scan but a magnetic resonance imaging (MRI) was not performed due to the cost. The pineal region is a heterogeneous area that includes the pineal gland and several parapineal structures and MRI helps to distinguish true pineal masses from parapineal masses impinging into the region of the gland [6].

Of all the possible treatment options, the neuroendoscopic approach may be advantageous over the use of histological diagnosis to treat non-communicating hydrocephalus if present, which has evolved to be a preferred approach to a newly diagnosed pineal region tumor [7]. Our patient was treated non-operatively, as the necessary armamentarium for an open surgery, stereotactic biopsy and neuroendoscopy were not available at our Centre. Besides, the neurosurgical giant, Harvey Cushing, in 1932 summarized that open surgery is always avoidable due to its peculiar location where exposing it to justify its removal is always difficult [8].

Patient had ventriculoperitoneal shunt insertion and recovered her ability to walk the following week after surgery. Neuroendoscopy may have obviated the need for ventriculoperitoneal shunt insertion besides allowing for tissue diagnosis, even, as the cost of its procurement precludes universal availability [9]. This is partly the reason why further treatments were carried out, besides inadequate facility for open surgery, without histological diagnosis. Repeat Cranial CT scan 6 months after diagnosis and completion of chemoradiation showed complete tumour regression and a return to normal living pattern, as demonstrated in *Fig. 2*. Similar finding was documented by Sakoda et al, who then strongly recommended their use in the treatment of pineocytomas [10].

Conclusion

Recognizing that best clinical evidence for a standard therapy for pineal tumours is yet to be available and the fact that currently pineal tumour treatment is experience-based with variability across Centres, we conclude that chemoradiotherapy can be considered as suitable possibility of primary treatment.

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