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Therapeutic benefits of combination chemotherapy with vincristine, BCNU, and procarbazine on recurrent cystic craniopharyngioma

A case report

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Summary

The authors report a case of recurrent cystic craniopharyngioma managed with chemotherapy. The patient refused adamantly the alternative therapy methods, such as surgery and radiotherapy, initially offered. Eight courses of chemotherapy with vincristine (2 mg/ M^2, i.v.) on day 1, 1,3-bis(2-chloroethyl)-1-nitrosourea (100 mg/ M^2, i.v.) on day 2, and procarbazine (50 mg, b.i.d., p.o.) on days 3 to 21 were administered at 6 week intervals. The effectiveness of this treatment modality has been evaluated by the unequivocal neurological improvement and by the decreases in size of the cyst using serial computerized tomography. Toxocities were mild and chiefly hematological.

Introduction

Craniopharyngiomas are considered histologically benign and account for approximately three percent of all intracranial tumors (1, 2). Their common suprasellar location and their frequent adherence to hypothalamus, optic chiasm, and related vascular structures is well known (1, 3). In general, however, surgery is the accepted form of treatment (1, 2, 4–16). Whereas total surgical extirpation is curative, this may only be possible in 12 to 55% of the cases (9, 10, 12–16). Other forms of treatment, from a simple cyst aspiration to a subtotal resection, have frequently failed to prevent recurrence (5, 6, 8–10, 12–22). Additional radiotherapy for residual or recurrent tumor has been recommended by some authors (9, 11, 13–18, 23–31). Intracystic isotopes have also been used in a few cases (32–36). We now report a case of a recurrent cystic craniopharyngioma with unequivocal response to chemotherapy documented by neurologic examination and computerized tomography (CT) scan.

Case report

A 31-year-old black woman entered the University Hospital on October 12, 1981, with a history of headaches, intermittent right side weakness, fatigue, and amenorrhea. The past history revealed that she underwent a craniotomy on March 30, 1981 for evacuation of a cyst with resection of a solid tumor (Fig. 1). A craniopharyngioma was confirmed by histopathology. On physical examination, she demonstrated mild right side hemiparesis. Hypopituitarysm was confirmed by laboratory studies and hormonal replacement was started.

On follow-up, there was no neurological improvement and serial CT scanning demonstrated progressive regrowth of the cystic portion of the craniopharyngioma (Fig. 2). The patient vehemently refused surgery or radiotherapy. However, she

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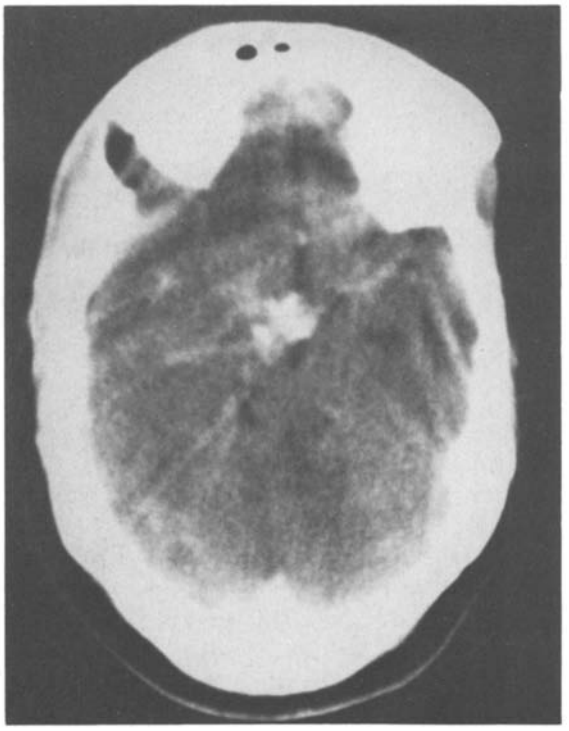

Fig. 1 Postoperative enhanced CT scan demonstrates residual, solid, calcified tumor in the suprasellar cystern.

was willing to try any other type of treatment. This dilemma was confronted, and we decided to consider her for a chemotherapy trial. Informed consent was obtained and a combination of three oncolytic agents, which we have used in a treatment protocol for malignant gliomas, was chosen.

Vincristine (VCR) (2 mg/M^2, i.v.) on day 1, 1,3-bis(2-chloroethyl)-1-nitrosourea (BCNU) (100 mg/M^2, i.v.) on day 2, and procarbazine (PCB) (50 mg, b.i.d., p.o.) on days 3 to 21 were scheduled for administration every 6 weeks. On January 12, 1982, the patient received the first course of chemotherapy. Neurological improvement was noticed after only 14 days and a CT scan showed reduction in the size of the cyst (Fig. 3). Subsequent CT scans were obtained before each course of chemotherapy (Fig. 4). Some hair loss and two episodes of reversible mild leukopenia with constipation were noticed during a total of eight courses of combination chemotherapy. Also, her LDH has remained elevated intermittently. She remains on hormonal replacement therapy and neurologic examination is unre-

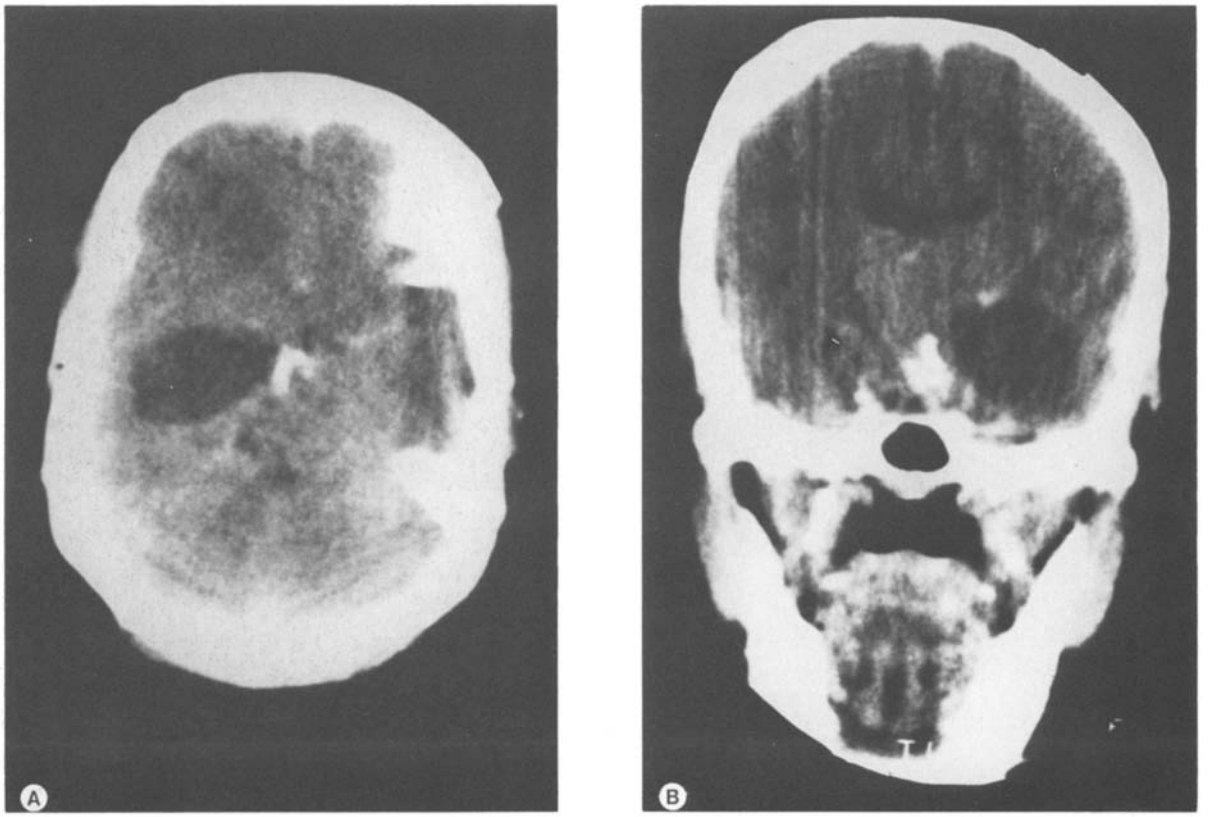

Fig. 2 A: axial and B: coronal enhanced CT scans show definite regrowth of a parasellar cyst without significant change in the solid portion of the tumor.

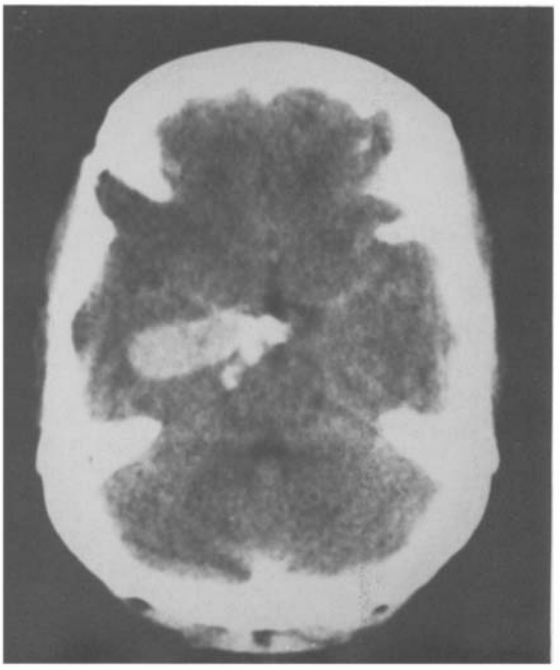

Fig. 3. A CT scan obtained 14 days after the first course of chemotherpy. Notice the homogenous enhancement of the entire cyst after the intravenous injection of contrast. The cyst appears to be smaller.

markable otherwise. A follow-up CT scan showed no regrowth of the cyst.

Discussion

There is little doubt that agents such as VCR, BCNU, and PCB will have some palliative effect on certain malignant brain tumors (37). There is no evidence at present, however, that such oncolytic agents have been administered to patients with recurrent craniopharyngioma.

In our patient, symptomatic regrowth of a craniopharyngioma was manifested at 8 months after resection. Serial CT scanning revealed the progressive enlargement of a parasellar cyst without substantial change in the solid portion of the tumor. The time course of these parameters suggested that this craniopharyngioma was behaving more aggressively (38). Chemotherapy was chosen only after the patient refused the more conventional methods of treatment. We thought, that craniopharyngioma – since most of them arise from squamous epithelium – might well respond to cytotoxic agents

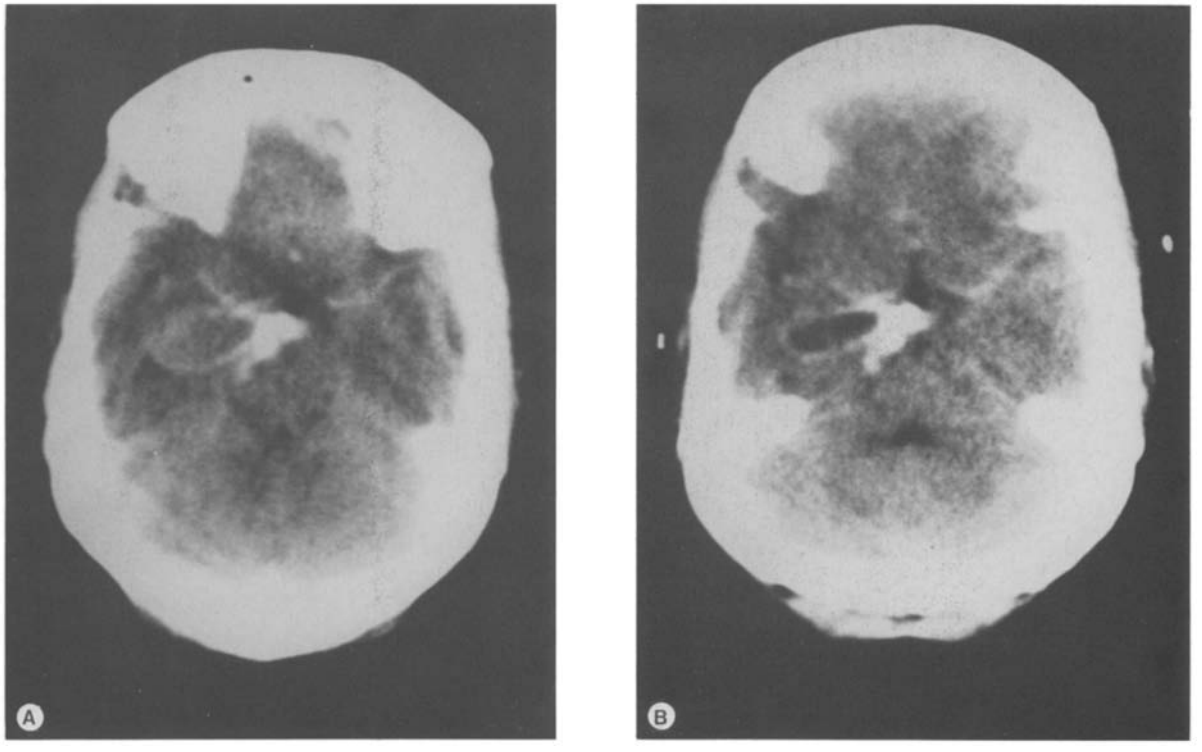

Fig. 4. Enhanced CT scans. A: after the fourth course of chemotherapy and B: after the sixth course of chemotherapy. Notice the progressive negative attenuation values within the cyst with a peripheral hyperdense rim.

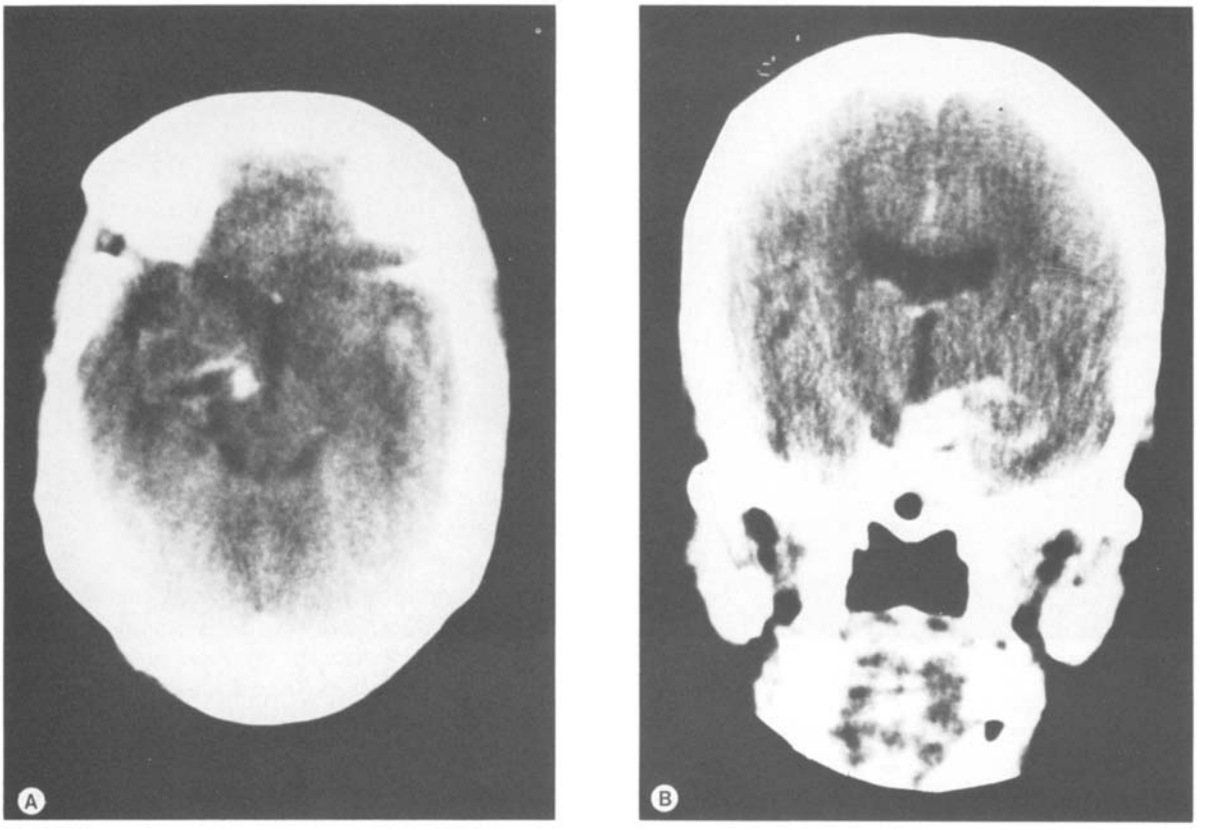

Fig. 5. A: axial and B: coronal enhanced CT scans after the eighth course of chemotherapy. Notice the significant decrease in the product of the two largest diameters of the cystic portion when compared with that of the pretreatment CT scan (Fig. 2).

that are known to affect other epithelial tissues. Indeed, after only 3.4 mg of VCR, 170 mg of BCNU, and 1 400 mg of PCB neurologic improvement was noticed. This initial therapeutic benefit correlated well with the CT scan finding of a decrease in the product of the two largest dimensions of the cyst. The sequential changes demonstrated by serial CT scanning, ranging from a marked homogenous enhancement of the cyst to negative attenuation values with peripheral dense rim, may suggest an effect of chemotherapy on the cyst wall.

Decrease cyst fluid formation after either radiotherapy or internal irradiation has been observed in some instances (18, 36). With these alternative modalities, however, some cases may require repeated cyst aspirations before fluid accumulation is controlled (15, 18, 36). In our case, however, an asymptomatic discrete increase in the cystic fluid accumulation after the fifth course of chemotherapy preceeded further decreases in the size of the cyst. Certainly, the bimodal decrease in the size of the cyst after chemotherapy differs from that observed after radiotherapy or internal irradiation (18, 36).

In our case, radiographic documentation of decreases in the size of the cyst as measured in the axial and coronal sections were of 80% and 71%, respectively (Fig. 5). At present, the patient remains neurologically improved without limitations in her housewife daily activities. We believe that our case offers reasonable, although isolated, evidence of the therapeutic benefits of chemotherapy on recurrent cystic craniopharyngioma. It is difficult to speculate on the prognosis of our patient, since we are not aware of any other available information about chemotherapy for this type of tumor.

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