Correspondence

POST-SURGICAL CONTRAST ENHANCEMENT MIMICKING RESIDUAL BRAIN TUMOUR

To the Editor

Contrast enhancement secondary to surgical trauma occurs in the postoperative brain (Grand et al., 1978; Krishra Rao et al., 1980). Postsurgical enhancement can mimick residual enhancing tumor confounding the interpretation of the postoperative CT scan. The following case and sequence of CT scans illustrate the difficulty in distinguishing between postsurgical changes and residual tumor.

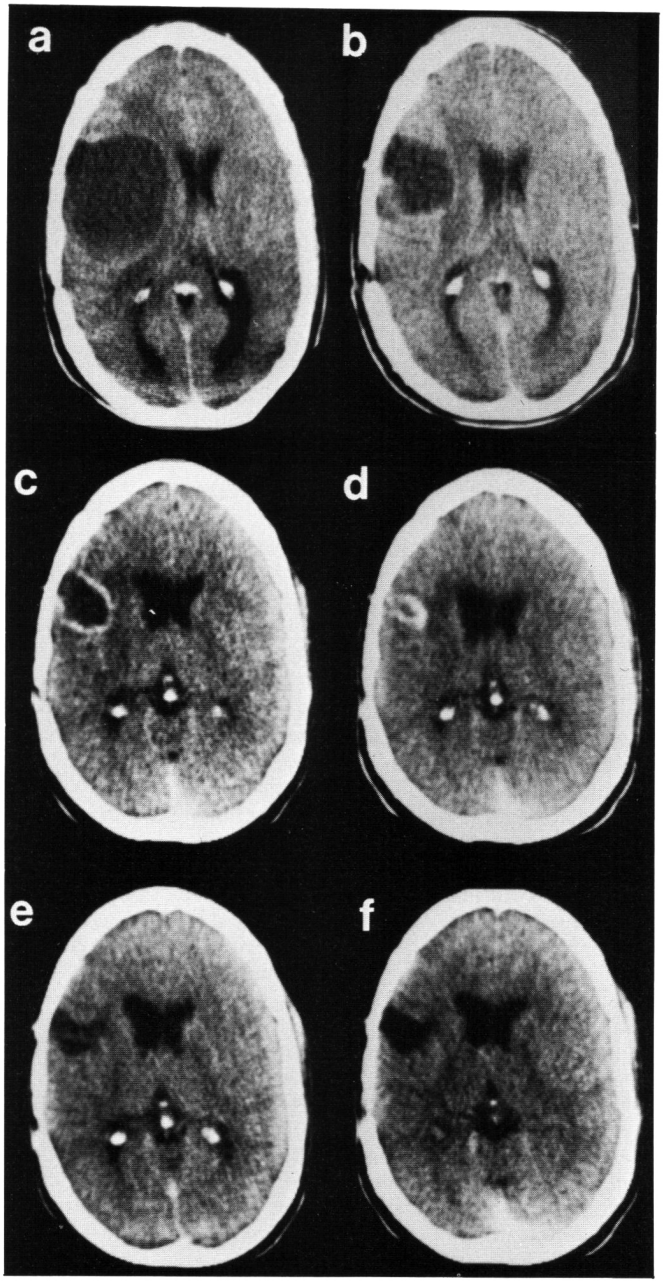

Figure 1

A 21 year old, right handed man developed symptoms of raised intracranial pressure in August 1981. An anaplastic astrocytoma had been partially resected and irradiated (5,000 r) the preceeding year. A second craniotomy was performed with gross total removal of a recurrent anaplastic astrocytoma. The preoperative scan (figure 1a) showed a low density mass in the right hemisphere with a faint rim of contrast enhancement. A CT scan ten days after surgery (figure 1b) demonstrated a faint rim of contrast enhancement at the operative site with considerably less mass effect and shift. Six weeks after surgery (figure 1c) there was further reduction in the size of the hypodense area but the resection line enhanced brightly. Residual tumor was suspected on the basis of the enhancement and chemotherapy was recommended. The patient declined further treatment. A CT scan eighteen weeks after surgery (figure 1d) demonstrated persistent enhancement at the operative site but further contraction of the hypondense area and expansion of the ipsilateral ventricle. Enhancement was no longer visible forty weeks after surgery (figure 1e). The patient remains well with no clinical or CT evidence of recurrence three years after the second surgical procedure (figure 1f).

We misinterpreted the ring enhancing lesion as residual tumor and recommended chemotherapy. Had the patient followed our advice he would have received unnecessary and potentially toxic treatment. Furthermore, since we are testing new anti-cancer drugs, we would have taken the CT changes as evidence of tumor response. We can state with confidence that the enhancement at the operative site was not residual tumor since it disappeared spontaneously. Enhancing anaplastic astrocytoma would not have regressed in the absence of treatment. The natural history of postoperative enhancement and strategies for distinguishing between postsurgical changes and residual tumor have not been studied in humans. CT artefacts in brain tumor patients are no longer radiological curiosities. Since clinicians are relying increasingly on the CT scan to judge the extent of tumor resection and its response to investigational treatments, it is crucial that pitfalls in scan interpretation be appreciated.

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