Diagnostic Images

Symmetrical 'vasogenic' brain oedema

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The patient

A man of 58 had been treated for nasopharyngeal carcinoma with 2 courses of radiotherapy 3–4 years previously. He had also received radiotherapy to the upper mediastinum for lymph node disease. Pulmonary metastases had been noted one year previously.

Further chemotherapy was started and shortly after completing 4 courses the patient had generalized tonic and clonic convulsions.

Comment

Low attenuation of the cerebral white matter occurs with oedema and demyelination. When unilateral or asymmetrical it is usually due to a tumour, granuloma or abscess.

The nidus responsible for the vasogenic oedema can be demonstrated after contrast enhancement. Bilateral demyelination occurs especially with viral infections such as herpes simplex encephalitis and progressive multifocal leukoencephalopathy but produces asymmetrical low attenuation of the deep white matter even though temporal lobes are frequently involved.

Figure 1 Chest radiograph. Extensive right upper lobe and apical fibrotic collapse is present adjacent to the mediastinum (crossed arrow). The lesser fissure is raised. Multiple nodules are visible (arrows) in both lungs probably representing metastases.

Figure 2 Computed tomographic unenhanced brain scan shows extensive bilateral and symmetrical low attenuation areas in the temporal lobes. Finger-like processes interdigitate with the grey matter of the cortex laterally and the basal ganglia medially.

Figure 3 There is essentially no change in the appearance following contrast enhancement; no enhancing nidus appeared to indicate the presence of metastases.

Late temporal lobe oedema and necrosis following radiation therapy occurs after a latent period of 9 months to 16 years and is bilateral in more than 50% of cases with contrast enhancement in the inferior portion of the temporal lobe in approximately 40%. Complete resolution can occur in response to steroid therapy. The appearances shown in this patient are typical of late onset temporal lobe 'necrosis' due to radiotherapy.

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References

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