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CONTINUING MEDICAL EDUCATION
ΣΥΝΕΧΙΖΟΜΕΝΗ ΙΑΤΡΙΚΗ ΕΚΠΑΙΔΕΥΣΗ

Medical Imaging Quiz – Case 8

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ΑΡΧΕΙΑ ΕΛΛΗΝΙΚΗΣ ΙΑΤΡΙΚΗΣ 2009, 26(6):845–846

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The patient presented with right hemiparesis after a hypertensive crisis. A CT scan was performed immediately to exclude a hemorrhagic infarction or any other lesion that would contraindicate anticoagulant therapy. The initial CT scan revealed changes in the greyness of the tissue of the left hemisphere (tissue density). These changes were due to development of brain edema and were characterised by a loss of distinction between the grey and white matter interface. The diagnosis was incipient infarction of the left middle cerebral artery. The patient started therapy with anticoagulant agents.

Three days after the initial diagnosis, there was no improvement in the patient's clinical status. A second CT scan showed an extensive left middle cerebral artery infarct. For the next 12 days the patient's clinical status showed minimal improvement. On the 16th day after presentation, the patient displayed paralysis of conjugate gaze to the opposite side (upper Foville sign). A further CT scan did not explain the clinical findings but showed improvement and reversion to normal density. This was because of the so-called fogging effect phenomenon. The patient had a history of iodine allergy; therefore, no contrast-enhanced scans were obtained. The diagnosis was clear from the previous scans.

Comment

After 24 hours, an infarct is visible as a hypodense area involving both grey and white matter. The larger the vessel that is occluded, the greater the size of the lesion. The topography of the hypodensity usually corresponds to the involved vascular territory. The hypodensity is due to cytotoxic edema and includes acute neuronal changes, characterised first by microvacuolisation, then eosinophilia of the neuronal cytoplasm, and later nuclear pyknosis and karyorrhexis. Subacute changes, after two weeks, show a decrease of the mass effect phenomenon, removal of all necrotic tissue, loss of normally organised CNS structure and gliosis. This causes an increase in the attenuation values and the CT appearance of the infarction may revert to normal or approximately normal density (isodense to normal brain) temporarily or possibly permanently. This phenomenon has been termed the "fogging effect". It is believed to be due to influx of lipid-laden macrophages, proliferation of capillaries and a decrease in bulk water in the infarcted area. Administration of intravenous

Figure 1. Brain CT scan on admission with minimal edema of the left hemisphere and loss of distinction between grey and white matter interface.

Figure 2. Brain CT scan 3 days after admission with a hypodense area involving the left MCA territory.

Figure 3. Brain CT scan 16 days after admission. There is amelioration of the infarction area which tends to have the same appearance as that of the opposite hemisphere.

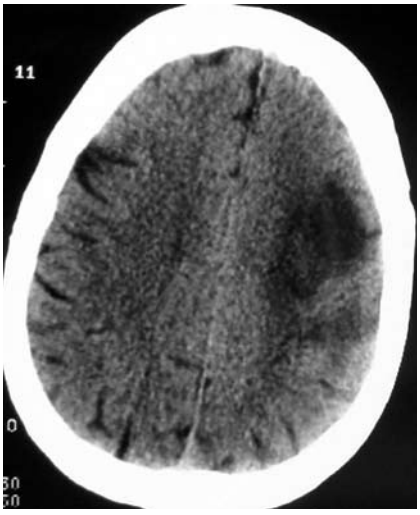

Figure 4. Brain CT scan 3 days after admission with a hypodense area involving the left MCA territory.

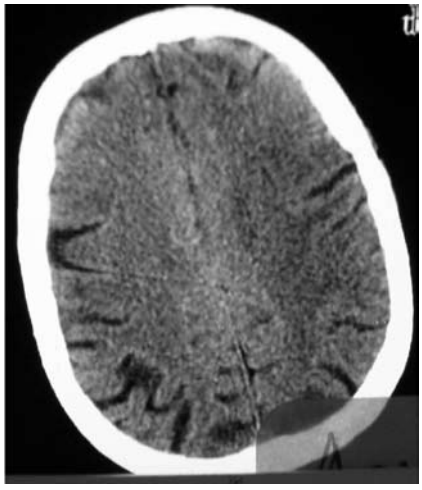

Figure 5. Brain CT scan 16 days after admission. This shows amelioration of the infarction area which tends to have the same appearance as that of the opposite hemisphere.

contrast can demonstrate the unrecognisable infarct.

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