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Confirmation of brain death with positron emission tomography

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After the recent developments in organ transplantation, brain death has gained importance as soon as it is possible to diagnose it. Brain death is the irreversible loss of all activities of the brain, brainstem and cerebellum, which are the parts of the central nervous system that remain in the skull. Clinical findings as well as some ancillary tests are important when diagnosing brain death. We present the scintigraphic imaging of brain death with both Tc-99m DTPA and F-18 FDG in an eight years old girl. A dynamic scintigraphic study was performed after the intravenous bolus administration of Tc-99m DTPA to an 8-year-old patient with the clinical diagnosis of brain death. In scintigraphic study, the activity of the scalp due to the circulation of the external cerebral artery can be misleading. For this reason to precisely determine the existence of brain death F-18 PET-CT study was performed. In PET-CT imaging, no significant intracranial accumulation of 18F-FDG was seen in our case. The absence of glucose uptake in the brain is an indirect indication of no cerebral blood flow. It is concluded that PET FDG imaging may be a useful technique in evaluating patients for brain death.

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