

Updating Emission Computed Tomography in Neuropsychiatry

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The advent of functional imaging has revolutionized the capacity to understand both normal and abnormal brain function. Of the currently available techniques, PET is the most informative because it allows accurate quantification of cerebral blood flow and metabolism and has superior spatial resolution when compared to SPECT. As a direct consequence of the introduction of PET and SPECT technology, significant advances have been made in our knowledge of conditions which have a recognized neuropathology. These include cerebrovascular disorders, head injuries, brain tumours, movement disorders and epilepsy. Such studies have yielded important findings which are not only academically interesting but also clinically relevant.

So, this thesis aimed to review the impact of these techniques on understanding different neurological and psychiatric disorders and their management.

Emission computed tomography proved to be useful in the following:

- TIAs when CT and MRI are usually negative and helps identifying those at risk of developing infarction. (Bogousslavsky et al. 1990).
- SAH as SPECT facilitates early diagnosis of cerebral hypoperfusion due to vasospasm before clinical signs and symptoms develop. (Davis et al., 1990)

Also in Sturge - Weber Syndrome, AVM and neuropsychiatric SLE. (Chiron et al., 1981; De Reuck et al., 1989; and Stappe et al., 1989)

. In head trauma, it helps to demonstrate the widespread cerebral dysfunction which correlates with the degree of clinical impairment. (Alavi et al., 1986). In cerebral tumours it is helpful in:

- The prediction of the grade of malignancy and its prognosis.

- The differentiation between recurrent tumours and radiation necrosis.

- Measuring the uptake of antineoplastic drugs and measuring its tumor killing potentials. (Report of the Therapeutics and Technology Assessment Subcommittee of the American Academy of Neurology (1991).

Distinguishing some of the various causes of movement disorders that are otherwise difficult to differentiate. (Perlmutter & Raichle, 1985; Leenders KL, Wolfson L, Gibbs JM, et al 1988; Report of the Therapeutics and Technology Assessment Subcommittee of the American Academy of Neurology 1991).

Early detection of HD in patients at risk, i.e. having positive family history and helps to diagnose patients with typical clinical features but with an unclear family history. (Baxter et al., 1992).

In epileptic patients with uncontrolled seizures of presumed focal origin who are candidates for epilepsy surgery. (Chugani et al., 1988)

. Early detection of dementia and differentiating AD from the following: (Chase

et al., 1987)

*MID

*Normal pressure hydrocephalus

*Dementia due to frontal lobe degeneration and subcortical dementias

*Depressive pseudodementia

. In psychoactive substance use disorders, it helps to study changes in CMR and CBF during acute and chronic intoxication as well as during withdrawal. (Mathew & Wilson, 1991)

In schizophrenic patients, most of the studies had demonstrated hypofrontality which has been attributed to either chronicity or exposure to neuroleptics. However, other areas of hypometabolism or hypoperfusion had been demonstrated depending on the subtype and symptoms. Also, changes in dopaminergic receptor binding in the basal ganglia have been found which are modified on treatment. (Farde et al., 1988, 1990; Bajc et al., 1989; and Paulman et al., 1990)

However, the following disorders require considerably more research as relatively few are done in order to define whether consistent abnormalities are present or not:

- Demyelinating disorders.
- Encephalitis
- Movement disorders
- Some psychiatric disorders as:
- Psychoactive substance use disorders
- Schizophrenias
- Affective disorders
- Neurotic disorders
- Autism
- Stuttering

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Epilepsy

First -Aid Measures during Seizures:

In a convulsive attack, restraint should not be applied to the clonic jerks as this may be dangerous and result in fractures or injury. Once the convulsion has stopped, the patients should be turned over into the recovery position.

In any attack, the airway should be checked and action taken if airway obstruction is developing.

No attempt should be made to place anything in the patient's mouth or force the teeth open, in the mistake belief that this will protect the tongue. This usually results in damage, or broken teeth, and the broken teeth may be inhaled, causing secondary lung damage.

In an automatism, the patient may behave in a confused way and should generally be left undisturbed.

Gentle restraint may be necessary if the automatism leads to dangerous wandering. Attempts at firm restraint, however, may increase agitation and confusion.

In the immediate post-seizure phase, the patients may be confused and need reassurance and sympathy.

Nothing should be given to drink after an attack, and extra anti-epileptic drug should not be given.

After a seizure, it is important to stay with the patient and offer reassurance until the period of confusion has completely subsided and the patient has recovered fully

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