The most remarkable advancement of recent neuronuclear medicine is three dimensional regional physiological study using an emission computed tomography (ECT) and positron emitted radiopharmaceuticals. In the situations, we have been developing an original high speed ECT system; "Headtome" which can be used for the both single photon and positron emitters. The detailed description of the systems were reported in the paper No. 19-21 by T.Kanno, Y.Miura, S.Miura. Transaxial tomographic imaging of conventional brain scan was effective for the lesions of base of the brain and post-surgical conditions. 3-D regional cerebral circulation can be examined also by single photon ECT and emitters. The study should be useful for the hospital which could not have a inhouse cyclotron. 3-D imaging of regional cerebral circulation was studied by the ECT system and continuous intracarotid-infusion of Kr-81m. With the study, distribution of decreased regional blood flow was imaged clearly in the patients with cerebral infarction. The fast scan time of "Headtome" is applicable to new method developed by T. Kanno and N. Miura is omniemisive 3-D cerebral circulation study. This study is now under development.

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