

Measurement of Regional Cerebral Blood Flow using Autofluoroscope.

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A system for the measurement of regional cerebral blood flow (rCBF) using an Autofluoroscope in connection with a general-purpose computer was reported. Five mCi ^{133}Xe saline solution was injected into the internal carotid artery and the regional washout of ^{133}Xe in the brain was measured every second by the autofluoroscope which had 14×21 mosaic NaI crystal (11×11 -mm). Informations recorded into the magnetic tape of the Autofluoroscope were fed into the computer. A spatial compression and a time compression were preprocessed because of the limitation of the computer memory and statistical fluctuations of the data. By the spatial compression several neighboring elements of the original data matrix were connected as a unit of processing matrix. The time compression was done as follows; sequential two frames of the clearance

curves in the first two minutes after the injection and sequential 15 frames in the next eight minutes were integrated. From the transformed ^{133}Xe clearance curves as above mentioned, rCBF of each unit was computed by means of height over area method and initial slope method, details of which had been reported by present authors. The hemispheric CBF was calculated from the accumulated curve of all units. Calculated results were printed out corresponding to the position of each unit and were drawn as bird's eye view using digital plotter. In addition, for visual information, initial parts of logarithmic clearance curves of every units were displayed on CRT corresponding to their positions. With this system rCBF in good spatial resolution was obtained.