Panel Discussion

A. Neuroradiology

A-1. Neurosurgical Application of Axial Transverse Tomography

Takayoshi NOMURA, Akira ASAI, Masayuki HAYASHI,
Inazo TODA, Makoto NEGORO, Shoichi INOUE,
Kotaro NUMAGUCHI and Tadayoshi MATSUDA

Department of Neurosurgery and Radiology, Nagoya National Hospital

Axial transverse tomography has been developed over the last twenty years. After many articles and monographs were published, the clinical value of this technique was proved by the pioneers. A unit for taking tomograms by lying patient, axial transverse tomograph of horizontal type has been manufactured since 1950 and is widely used in Japan.

In this paper, the axial transverse tomograms of the skull and air encephalotomogram were studied on the neurosurgical point of view.

The characteristic of this technique was indicated as obtainable of the perfectly entire contour of the axial transverse surface.

Axial transverse tomograms of the skull, including air encephalotomograms, taken parallel to the orbitomental line were demonstrated to explain the usefulness of this technique to the neurosurgical clinics.

A-2. Diagnostic Value of Roulette Tomography and its Harmonized Film in Intracranial Lesion

Takashi IWABUCHI, TERUHIKO TANAKA, Shigeaki KANAYAMA,
Hiroshi USHIROBATA and Kenji OWADA

*Division of Neurosurgery, Institute of Brain Diseases,
Tohoku University School of Medicine, Sendai*

Tomography was developed a half century ago. However its application to intracranial lesion was, contrary to expectation, limited due to the blurring bony shadow. Recently, improved tomographical apparatus with long complexed trajectories or orbits of the tube and film shift has been practicable. These devices enabled

tomography to apply for neurosurgical diagnosis and its diagnostic value has been discussed in several papers since 1967.

We have used Toshiba LGC-3 developed by Matsukawa and his coworkers in our 322 clinical cases in the period beginning August 1967 through October 1971. The exposure was accomplished utilizing a 3-looped superior epitrochoidal tube shift with the full-range X-ray exposure. This technique is called "roulette tomography." This method facilitated topographical diagnosis of intracranial calcification, deformity or destruction of the skull base and orbit, lesion of the sphenoidal air sinus and also measurement of the pituitary fossa. More frequently, combination of this technique with pneumoventriculography and/or pneumoencephalography or with so-called Conray (R)-ventriculography was really practicable and notably useful.

When there is obvious danger of herniation, continuous ventricular drainage was instituted in advance and intraventricular cerebrospinal fluid was replaced with air and, if necessary, air insufflation with spinal tapping was added. Roulette tomography was commonly performed in two dimensional planes, i.e. sagittal plane and frontal plane which is vertical to the imaginary plane including the superior margin of the orbit and external auditory meatus. Each frontal and sagittal section consisted of several films apperting 5 mm from each other passing through the presumable lesion.

In such a case as idiopathic epilepsy without suggesting morphological lesion, not only the outline of the brain stem but also the cross section of the vertebrabasilary artery, the trigeminal nerve root were clearly visualized without any interference from a blurring bony shadow. The normal and abnormal shape of the third, fourth ventricle, aqueduct of Sylvius as well as intraventricular tumorous lesion of various size were effectively delineated. Suprasellar, prepontine, pontine and cerebellopontine angle tumor of variety were clearly revealed themselves. This technique was also helpful to differentiate a nosurgical intracranial disease because of its easy practicability and of safety, usually without any positive contrast media, only with nontoxic air.

Attained roulette tomogram inevitably shows low contrast pattern but no blurring shadow. Therefore, when so-called harmonization technique was applied, its delineating ability might be remarkably multiplied.

Further advance seems to be expected with a little more modification of presently available apparatus from the neurosurgical standpoint.

A-3. Pneumautotomography for Third and Fourth Ventricle in Routine Pneumoencephalography without Special Instrument

Sumiyoshi TANABE and Yuji MIYAZAKI

Department Neurological Surgery, Sapporo Medical College and Hospital

Superimposition of the dense shadow caused by the petrous bone, mastoid air