Computed Tomography for Neurological Intensive Care Patients

Report on One Hundred CT Examinations

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Summary. The first 100 computed tomographic (CT) examinations of the patients on the neurological intensive care ward are discussed and reported on the basis of selected typical findings. Characteristic patterns of the CT findings in determined cerebral diseases are explained. The possibility and necessity of CT observations of the development, of inflammatory and cerebrovascular processes in particular are emphasized. A comparison of our experience with CT and other neuroradiological methods, is made. The clinical diagnoses, including the respective number of cases and the pertinent CT findings, are presented in a Table.

Key words: CT examinations – Neurological intensive care patients – Frequency and kinds of clinical diagnoses – Typical CT findings.

The patients of a neurological intensive care ward are clearly different from those on the usual neurological general wards because of the acute threat to their life, which is a paramount factor. This jeopardy is first of all due to very special groups of diseases.
Láhoda and Neu, for example, give, among other things, the following indications for neurological intensive treatment or supervision: acute or chronic inflammatory conditions of the central nervous system with vital complications, e.g. ascending polyradiculitis with threatening insufficiency of breath, acute inflammatory myopathies, myasthenic crises, cerebrovascular disorders, increased intracranial pressure of certain origin, intoxications with neurological symptomatology and respiratory paralysis, preoperatively endangered cerebral tumor patients and unconscious patients with closed head injury without surgical indication.

We have the task with many endangered patients of making the diagnosis as quickly as possible in order to apply effective therapeutic procedures in time. For this we have depended on the traditional neurological and neuroradiological methods, which have been supplemented in the last few years by the use of computed tomography (CT). Because of painlessness and low risk, this method of examination largely meets the stress resistance of neurological intensive care patients. The examination must be carried out under anaesthesia, only with restless patients, because otherwise the pictures produced will not be usable due to artifacts.

Material

Since January 20, 1975, 100 CT examinations have been performed on patients on the neurological intensive care ward. This has presented the opportunity to survey the diagnostic performance of CT on patients with severe disorders of cerebral function.

The technical and physical foundation for, and the method of examination with, computed tomography have been reported in detail by Hounsfield, Ambrose, Kazner, Thun and others.

Results

The series is subdivided into 62 CT original examinations and 38 reexaminations. Of the 62 original examinations, 54 disclosed signs of change of location, shape and size of normal structures and an increase or decrease of the density of the cerebral structures. No perceptible changes were revealed by eight examinations and thus could not give positive substantiation for a clinical diagnosis.

Table 1 presents in detail the clinical diagnoses, their frequency and accompanying positive (pathological) or negative (non-pathological) CT findings.

Head Injuries

There were nine cases of closed head injury (Fig. 1) which did not require primary surgical intervention. These formed the largest diagnostic category in our material.

Surgical or conservative methods can quite frequently be decided from the CT findings alone without additional neuroradiological studies. Contusion, hemorrhage, necrosis and edematous zones can be identified quickly and reliably; the same applies to the extent and location of cerebral lesions, which frequently occur in multiples.