In this report, head tumors due to injury, which appears most frequently, are studied with differential diagnosis of those from other causes according to our block diagram and illustrative diagnostic procedures stated by representative 3 cases.

i-2. Brain Tumors in Childhood

—Upon the Importance of Proper Early Differential Diagnosis and Emergency Treatment—

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Upon clinical and angiographical evaluation of 52 cases of brain tumors in childhood admitted to Keio University Hospital between 1964 and 1968, the values of angiography and air study to establish the correct differential diagnosis of the brain tumor and hydrocephalus caused by multiple causes were discussed.

Brain tumor in children cases has several peculiarities such as 1) growth is apt to localize alongside with the foetal residual tissue, 2) the percentage of the infratentorial lesion is 65%, much higher than in the adult cases, 3) histologically glioma occupies 77.5% of the total cases, 4) intracranial hypertension and cephalic enlargement are the commonest manifestations due to passage disturbance of c.s.f. and it is apt to lack in focal signs frequently, 5) prognosis is poor in general and difficulty of the differential diagnosis from the congenital hydrocephalus causes the delay of the proper diagnosis and the appropriate treatment.

Additionally in some cases, emergency shunt operations such as ventriculo-atrial shunt, continuous ventricle drainage or the repeated ventricle tapping were required prior to the radical operations because of the abrupt increase of intracranial pressure not infrequently observed in the children brain tumor cases.

In conclusion prompt and deliberate preoperative examinations are particularly required in the cases of children brain tumors is stressed.

i-3. Use of Ultrasonics in Operation of Ventriculo-Atrial Shunt

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There are several methods for determining the location of the distal end of

ventriculo-atrial shunt. It is the purpose of the present communication to describe a new method for accurate placement of the distal end. This method involves use of ultrasonics. The probe is 4.5 mm in diameter and 30.0 cm in length at frequency of 5 MC. The probe is coated by silicon rubber and exposed at the end of it. Another improved type is 3.5 mm in diameter.

In dogs the probe of ultrasonics was inserted into the right atrium through the external jugular vein. EKG lead was attached to the probe and accurate placement of the distal end in the atrium was decided by EKG. Distance between the tip of the probe and the right atrioventricular valve was measured by A-scope of ultrasonics. The echoes of ultrasonics from the tricuspid valve were multiple spikes on oscilloscope.

The more slender probe of improved type was made after this experiment. This probe was used at operations of ventriculo-atrial shunt in three hydrocephalic cases. Echograms of ultrasonics from the tricuspid valve were obtained successfully in all cases and the venous catheters were replaced with the same length. Postoperative roentgenograms of the chest have confirmed placement of the distal end within the atrium in each patient.

Becker and Nulsen stated that patients with the low catheter placements developed bactericemia and with the high catheter placements developed blockade of the distal end. We have measured exactly the distance between the tip of the probe and the tricuspid valve in hydrocephalic cases with ultrasonics and the distal ends of ventriculo-atrial shunt were placed at suitable position in the right atrium.

As another method of utilization of ultrasonics, thickness of the mantle was measured with ultrasonics in our department because air study in patient with ventriculo-atrial shunt is impossible after shunt operation. Use of ultrasonics after shunt operation is useful for the measurement of the thickness of the mantle and gives informations in follow-up observation of postoperative hydrocephalus.

i-4. Causes of Pudenz's Catheter Blockage and Its Prevention

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Thirtyfive ventriculo-atrial shunts were performed during the past six years, in which five cases received ventricular revision because of ventricular catheter blockage. The causes of the blockage were as follows; plugging by choroid plexus, 3 cases, kinking of the catheter, 1 case, not clarified at revision, 1 case. We emphasized the importance of the blockage by choroid plexus plugging and