Transorbital Brain-Ventricle Puncture
or
A New Method for Pneumoventriculography.

By

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Is it impossible to manipulate the ventricle puncture more easily and briefly than the routine one, or, isn't there any way possible to take place it without making of trepan to the cranial bone? With this object, an applying of trepan by means of drill must of course be avoided. For the purpose of this matter, we have anew pursued and, at last, attempted to apply the technique for transorbital lobotomy which had already described by Freeman1), and then, certain successes have been obtained, so that, in this paper, those results, especially those methods, are reported.

Technique and Examples.

After many trials, we have anew designed and employed the ventricle puncture needle as shown in Fig. 1, which is of course applicable as the lobotome in case of transorbital lobotomy. Owing to the bigness of the used needle, though its stylet is the routine lobotome for transorbital lobotomy, its fixing at the orbital portion is very certain, and consequently, a manipulation of pneumoventriculography has become easily, too, since, according to the accurate fixing of the needle itself, the movements of the

Fig. 1. The ventricle puncture needle designed by the authors. The upper: stylet; the under: tube.
needle, or the influences due to manipulation of pneumobreathing are scarcely recognizable.

A determination of the direction of inserting needle is relatively difficult, but important. We have quantitatively measured various positions of ventricle shadows in pneumoencephalograms of the psychotics (Fig. 2 and Table I). At last, we have aimed the anterior angle of the side-ventricle as the first mark of insertion of the needle, so that its direction may be suitable, when it is inserted as the heavy lines in Fig. 2, which accord with the measured values in Table I. The distance between the orbit and the anterior angle of the side-ventricle, viz. \( \overline{od} \) in Fig. 2, was ca. 8 cm.

![Fig. 2. Measured positions in pneumoencephalogram. G: grabella; I: inion.](image)

**TABLE I.**
Results of Quantitative Measurement of Ventricle Shadows in Pneumoencephalograms from 15 Cases of Schizophrenia.

All marks accord with those in Fig. 2.
The angle indicates that between \( \overline{OA} \) and \( \overline{GI} \) (base-line), that between \( \overline{OB} \) and \( \overline{GI} \),

<table>
<thead>
<tr>
<th>Value</th>
<th>Distance from inion</th>
<th>Angle against base-line (( \overline{GI} ))</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measured valve</td>
<td>40.5% 30.5% 27.3% 23.3%</td>
<td>43.1° 34.6° 30.8° 26.2°</td>
</tr>
<tr>
<td>Maximal value</td>
<td>+5.5° +10.0° +11.9° +9.0°</td>
<td>+13.9° +16.4° +17.2° +13.8°</td>
</tr>
<tr>
<td>Minimal value</td>
<td>−3.3° −4.8° −2.3° −9.0°</td>
<td>−7.1° −9.6° −8.8° −11.2°</td>
</tr>
</tbody>
</table>

The procedure of pneumoventriculography is easily. At first, the puncture is made in a supine position. If the cerebral liquid is flew, subject's face is now turned laterally and a little lower, making the punctured ventricle downward. And then, air-liquid-exchange is taken place.
Fig. 3. Pneumoventriculograms of 2 cases of schizophrenia. Black narrow line is the shadow of inserted needle.

Fig. 4. Pneumoventriculograms from a schizophrenic patient operated formerly subcortical undercutting.

A manipulation of puncture needs ca. 1 or 2 min., and also, that of air-liquid-exchange, ca. 10 min., so that narcosis of shorter duration,
such as electroshock or intravenous administration of barbiturates was necessary to employ at the beginning of the procedure.

In Fig. 3 and 4, thus made ventriculograms of 3 cases are demonstrated. A half year, or more, ago, cases A and B had operated prefrontal lobotomy, and case C, frontal subcortical undercutting. Case D was again photographed 7 days after the first pneumoventriculography. Until today, we have experienced 15 cases, however, we could not observed any noticeable complications.

COMMENTS.

It is out of the purpose of this communication to compare this method with the routine ventricle puncture, however, it must be worthy to notice that this method is not only possible to practise, but this method has also established by such a technique. This method, we have thought, has long points, above all, it may be such a possibility that it is capable to take place within short duration. Also, there are, perhaps, no noticeable complications as well as cases operated transorbital lobotomy. When the ventricles are large, this method seems easily to practise, though this item accords with those in cases of the routine ventricle puncture. We have not yet opportunities to apply this method to cases of brain-tumors, however, its possibility is considered to exist. In reference to this method, it needs of course to have many, various and furthermore investigated experiences: we are now pursuing them, so that the detailed description will be reported in the near future.

SUMMARY.

The technique of transorbital brain-ventricle puncture and the new method for pneumoventriculography were reported. At the same time, the ventriculograms in several cases have been demonstrated, in addition to some comments.

References.