THE VALUE OF THE ELECTROENCEPHALOGRAM IN SELECTED CASES OF SUBDURAL HEMATOMA

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In a previous communication it was shown that the initial electroencephalogram (EEG) was of no value in differentiating the operative from the nonoperative type of head injury, insofar as unilateral subdural hematomas in adults were concerned. The parameters of reduction in amplitude with or without a slow wave focus in the EEG were present in these two groups of head injuries regardless of whether the initial EEG was taken in the acute, subacute, or chronic stages.

It would therefore seem that the EEG would have only limited value from the standpoint of identification of unilateral subdural hematomas in adults. However, as a corollary its use is much more important from a negative standpoint; that is, given an individual who has had a head injury and who does not present the criteria of reduction in amplitude with or without a slow wave focus, the possibilities are good that there is no subdural hematoma present.

There is an interesting exception to the above, in those instances in which a subdural hematoma is present on the same side as the focal neurologic symptoms and signs. In the previously reported group of 60 cases there were 6 patients who had a subdural hematoma with paresis on the same side as the lesion (here called ipsilateral subdural hematomas). Since that communication we have had an additional 6 cases. In all cases the hematomas and the focal signs were present on the side of the amplitude reduction and delta focus. In brief, it may be stated that given an individual, who has had a head injury and who manifests focal neurological signs such as a hemiparesis, if there is an amplitude reduction in the EEG on the same side the possibilities are good that a subdural hematoma is present on that side. Although this finding may be of limited value in large accident rooms where comatose patients frequently arrive with no history or evidence of trauma, the presence of focal neurologic signs coupled with an ipsilateral reduction of amplitude on the EEG, should make one strongly suspicious about the possibility of subdural hematoma on the side of the decreased voltage.

It is the purpose of this communication to report on the positive value

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of the EEG in the identification of unilateral subdural hematomas in adults. Further, it will be demonstrated that some EEG epochs better exemplify amplitude asymmetry than others.

PRESENT STUDY

In the present studies the EEG findings in 12 proven cases of ipsilateral subdural hematoma were reviewed. Serial EEGs were examined for additional diagnostic clues.

The EEGs were performed on a Grass 8-channel ink-writing oscillograph with a minimum of 13 needle (27 gauge) electrodes inserted into the scalp and ear lobes using the following references:

1. Paired symmetrical electrodes referred to both ears.
2. All electrodes on the left side referred to the left ear and those on the right to the right ear.
3. Similar to (2) above except that the reference point was a common vertex placed in the midsagittal plane halfway between the frontal and parietal electrodes.
4. Bipolar triangulation (here called short intercepts).

RESULTS AND DISCUSSION

Figs. 1–3 demonstrate 2 cases in which ipsilateral hematomas were evacuated subsequent to electroencephalography. In each case there was reduc-

![Figure 1](image_url)

Fig. 1. D.F. was found comatose on May 12, 1951. She had left 3rd nerve paralysis, left hemiplegia and bloody CSF. There was initial clinical improvement. EEG shows reduction in amplitude and a delta focus on the left side, maximal in the temporal region. Note also the depression of the sleep spindles on the left side. Because of these findings, and in spite of the left hemiplegia, a left carotid arteriogram was done and demonstrated a picture compatible with a subdural hematoma on this side. The patient remained comatose subsequent to arteriography and a subdural hematoma was evacuated on the left side. She made a complete recovery.