SHORT REPORT

Postictal psychosis as a risk factor for mood disorders after temporal lobe surgery

Kousuke Kanemoto, Jun Kawasaki, Estuko Mori

Abstract
This study investigated the psychiatric consequences of 38 consecutive patients who had surgery for intractable temporal lobe epilepsy with special attention to postoperative mood disorders. A close interrelation between preoperative postictal psychosis and postoperative manic or depressive episodes was suggested. Left sided lobectomy augmented this correlation. Because the first sign of postoperative manic and depressive episodes appeared within 1 month and 2 months respectively, cautious psychiatric follow up for several months after surgery proved to be crucial to prevent postoperative suicides. Postoperative manic depressive episodes disappeared within the first 2 years after operation without exception, if treated suitably. This suggests that we do not have to preclude patients with postictal psychosis as surgical candidates, but measures must be taken to prevent postoperative depressions.

Keywords: epilepsy; mood disorder; temporal lobectomy; postictal psychosis

The occurrence of frank psychiatric illness after temporal lobectomy has been neglected. Most surgical centres had given up surgical treatment in cases with gross mental changes after initial vigorous trials. Indeed, after the treatment in cases with gross mental changes after temporal lobectomy has been neglected. Most surgical centres had given up surgical treatment in cases with gross mental changes after initial vigorous trials. Indeed, after the treatment in cases with gross mental changes after the operation, patients were recommended in principle to remain in hospital during this period.

Subjects and methods
This study comprised all patients (n=38) who had undergone inferior (or inferior and middle) temporal lobectomy with hippocampectomy and amygdalotomy at the Kansai Regional Epilepsy Center from 1989 to 1996 with a minimum follow up period of 2 years after the surgery. Among them, eight patients exhibited mood disorders (manic, hypomanic, or major depressive episodes) after surgical intervention. The diagnosis of mood disorders was based on DSM IV. The preoperative episodes of psychoses were divided into two types as described previously; one type occurred with clusters of complex partial seizures (postictal psychosis) and the other type occurred with abolition or remarkable diminution of seizures (acute interictal psychosis). Patients in chronic psychotic states had been excluded as surgical candidates beforehand. Because our preliminary study had confirmed that the first sign of psychiatric complications, including suicide attempts, almost always occurred within the first 4 months after the operation, patients were recommended in principle to remain in hospital during this period.

We compared patients with postictal psychosis (P group) with those without (non-P group). Sex, age at the time of the operation, duration of epilepsy, side of lobectomy and language dominance, full scale IQ, surgical results estimated according to Engel’s classification, and types as well as incidence of preoperative psychotic episodes and seizures were compared. Language dominance was decided with the intravenous amytal test. Febrile convulsion lasting for more than 15 minutes or with a transient postictal neurological sign were termed complicated febrile convulsions. Statistical analyses were made by $\chi^2$ test with Yates’ correction for small numbers, and $t$ test.
Results of operation, Engel’s class (n (%)):

<table>
<thead>
<tr>
<th>Engel’s class</th>
<th>MD (n=30)</th>
<th>ND (n=8)</th>
</tr>
</thead>
<tbody>
<tr>
<td>III/IV</td>
<td>3/30 (10)</td>
<td>0/8 (0)</td>
</tr>
<tr>
<td>II</td>
<td>3/30 (10)</td>
<td>1/8 (12)</td>
</tr>
<tr>
<td>I</td>
<td>24/30 (80)</td>
<td>7/8 (88)</td>
</tr>
</tbody>
</table>

Histology of resected tissue (n (%)):

<table>
<thead>
<tr>
<th>Tissue Type</th>
<th>MD (n=30)</th>
<th>ND (n=8)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal tissue</td>
<td>2/30 (7)</td>
<td>1/8 (12)</td>
</tr>
<tr>
<td>MTS</td>
<td>26/30 (87)</td>
<td>7/8 (88)</td>
</tr>
<tr>
<td>Tumour</td>
<td>2/30 (7)</td>
<td>1/8 (12)</td>
</tr>
<tr>
<td>GTC</td>
<td>15/30 (50)</td>
<td>5/8 (62)</td>
</tr>
</tbody>
</table>

Duration of epilepsy (y, mean (SD)) 15.6 (8.6) 18.9 (6.5)

Age at onset (y, mean (SD)) 10.5 (5.4) 7.9 (4.9)

Sex (F/M) 16/14 3/5

Seizures (n (%)):
- Left lobectomy (n (%)) 16/30 (53) 7/8 (88)
- Postictal P (n (%)) 1/30 (3) 3/8 (38)

Preoperative psychosis (n (%)):
- Postictal P (n (%)) 2/30 (7) 3/8 (38)

Language dominance 4/20 1/6

Depressive states resolved and have not recurred. It should also be noted that all the patients with a preoperative history of postictal psychoses who later developed mood disorders after temporal lobectomy had ictal fear as an aura.

The incidence of preoperative episodes of postictal psychosis were five times more frequent in the MD group (38%) than in the non-MD group (7%). Patients with a left sided lobectomy predominated in the patients with postoperative mood disorders (88% v 50%). The simultaneous presence of these two factors predisposed the patients operated on to subsequently develop mood disorders with a significantly higher frequency ($\chi^2 = 4.62$, $p<0.05$).

Discussion

Hill et al. were one of the first groups of authors to recognise that depressions could occur after temporal lobectomy. In the series evaluated by Taylor, five patients committed suicide. In another follow up study, Taylor and Marsh reported that the mortality during the first 2 years postoperatively was double that in any subsequent 2 year period. All suicide attempts occurred within the first postoperative month in the Danish series investigated by Jensen and Larsen. In our series, postoperative depressive states always started during the first 4 months.

Surprisingly, our study suggested that patients with preoperative histories of postictal psychosis and left sided pathology had a higher risk of developing mood disorders postoperatively. As in the re-evaluation of the Maudsley series by Bruton, we found that depressions occurred more than twice as often in patients undergoing a left sided lobectomy (n=7) than in those undergoing a right sided lobectomy (n=3). These risk factors need to be amplified by additional evidence. However, until it is proved otherwise, we should keep patients, especially those with such risk factors, under close observation at least during the first 4 months after lobectomy. Considering that manic or depressive episodes, by contrast with paranoid states, rarely recur once resolved, this remedy is all the more important. Peculiar dysphoric states immediately after surgery as well as the presence of ictal fear coupled with postictal psychoses may also predict the later development of postoperative mood disorders.

A literature search failed to find any descriptions of postoperative hypomanic or manic states except for our recent report. The current study confirmed the presence of a substantial number of postoperative transient manic or hypomanic states and, as already mentioned, the close relation of postoperative mood disorder to the preoperative postictal psychoses. Considering the intrinsic interrelatedness of postictal psychosis with dramatic affective change, this preponderance of postoperative mood change among patients with postictal psychosis was very impressive.

The postoperative affective psychosis was overrepresented in patients with left sided lobectomy in our series. By contrast, just as Trimble had summarised, new paranoid psychoses that appeared after the operation were almost always found in patients with right sided lobectomy in our series. This laterality effect of temporal lobectomy was the reverse of the well known theory of Flor-Henry, who theorised that left sided epileptic activity was coupled with schizophreniform psychosis whereas right sided seizures led to affective
psychosis. The predominance of the postoperative affective psychosis in left sided lobectomies apparently contradicts recent reports that suggest a predominant role of the right hemisphere in secondary mania.\(^4\)\(^2\)\(^1\) Excitatory lesions such as epileptic foci could have converse effects. Whether this laterality effect is simply a coincidental artifact due to the few patients in the sample or means something important remains to be elucidated.

There are methodological limitations in this study. The sample was not unbiased, as we are one of the tertiary centers for especially intractable epileptics. Most of the patients with identifiable lesions are treated operatively in the preceding medical facilities with the result that only patients without apparent MRI lesions come to us. This obviously heightens the proportion of patients with mesial temporal sclerosis in our series. Occurrences of psychotic episodes urge patients and families to seek more intensive medical care. This possibly increases the incidence of patients with psychotic episodes in tertiary centres such as ours. In addition, eight patients are too few to permit any definite conclusions. The suggestions drawn from our data remain tentative and need amplifying and further strengthening. Ferguson and Rayport\(^6\) studied lobectomised patients and made an excellent psychological explanation of the postoperative distress in some patients as a failure of the reversed rehabilitation process of learning to live without handicap. The biological factors influencing postoperative mental states demonstrated by us supplement that study. Taking these biological factors into consideration helps us to understand more precisely the psychosocial dynamics presented by Ferguson and Rayport.\(^9\)

Our data clearly suggest, just as those of the Maudsley series, that cautious surveillance and prompt treatment of the postoperative mood disorder is an indispensable constituent of the surgical therapy for intractable temporal lobe epilepsy because neglect of this could lead to unnecessary death or could substantially delay the social adjustment of the patients. The risk factors found in this study could lead to more appropriate postoperative follow up protocols.

We dedicate this work to the deceased Dr Itsuo Kawai, the founder of our Kansai Regional Epilepsy Center, our great teacher, and our intimate friend.

---

Postictal psychosis as a risk factor for mood disorders after temporal lobe surgery

Kousuke Kanemoto, Jun Kawasaki and Estuko Mori

J Neurol Neurosurg Psychiatry 1998 65: 587-589
doi: 10.1136/jnnp.65.4.587

Updated information and services can be found at:
http://jnnp.bmj.com/content/65/4/587

These include:

References
This article cites 14 articles, 4 of which you can access for free at:
http://jnnp.bmj.com/content/65/4/587#BIBL

Email alerting service
Receive free email alerts when new articles cite this article. Sign up in the box at the top right corner of the online article.

Topic Collections
Articles on similar topics can be found in the following collections

- Psychotic disorders (incl schizophrenia) (169)
- Mood disorders (including depression) (221)
- Epilepsy and seizures (846)
- Suicide (psychiatry) (36)

Notes

To request permissions go to:
http://group.bmj.com/group/rights-licensing/permissions

To order reprints go to:
http://journals.bmj.com/cgi/reprintform

To subscribe to BMJ go to:
http://group.bmj.com/subscribe/