Cranial CT of Endogenous Psychiatric Disorders

Yamaguchi, Michio / Yamada, Taigo

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Cranial CT of Endogenous Psychiatric Disorders

Michio Yamaguchi and Taigo Yamada

Two hundred sixty studies of plain cranial CT of endogenous psychiatric disorders were analyzed. Data was compared with 93 cases with non-psychiatric diseases, which had CT studies in other hospital as the medical or surgical patients. They complained of headache, light headedness, or vertigo. As their CT films demonstrated no organic condition but some aging process, this group can be used as the control group in this instance. In the group of schizophrenia, significantly abundant incidence of abnormal study were observed even in young population. The aged patients of this condition showed more drastic changes on CT films. Some factors which influence these CT findings will be hopefully elucidated in future on the schizophrenic disorders. In the affective disorders, on the other hand, non–significant difference was shown when compared with the control group. Atypical psychosis cases were also analyzed but no significant data became available. The cavum septi pellucidi was also checked in this study. However, no distinct incidence of this condition was proved in the schizophrenia or other groups.

Key Words
Cranial CT, Schizophrenia, Affective disorder, Cerebral atrophy, Cavum septi pellucidi.

INTRODUCTION

In mental hospitals, the study of cranial CT has contributed to differentiate many organic lesions from the intrinsic psychiatric disorders. The brain tumors, the cerebral vascular lesions, and other spatially pathological formation have been hopefully ruled out before the initiation of the possible treatment for schizophrenia, affective disorders, or other intrinsic diseases in the psychiatric practice.

The authors collecting 260 cases of intrinsic psychiatric disorders out of total 778 studies of the cranial CT taken in a local mental hospital. The CT findings from that collection were analyzed at this time to elucidate some specific or nonspecific characteristics on the inspection of routine cranial CT for the screening purpose. Some reports (1,2,3) have appeared on the incidence of the cerebral atrophy in the schizophrenic population when compared with other mental disorders (except for senile psychosis or senile dementia). The authors observed that the atrophic findings of slight in grade but significant in statistical meaning in the schizophrenia group when compared with the CT studies of control patients who had no psychiatric complaint at their medical or surgical departments in another local hospital. CT of the affective disorders showed not significant dif-

Faculty of Health Science, Kobe University School of Medicine, Kobe, Japan.
ferences from the findings of the control group.

MATERIALS AND METHODS

From May 14, 1990 to July 6, 1994, 778 of cranial CT studies were performed routinely in Minatogawa Hospital, Hyogo-ku, Kobe. All cases were diagnosed as psychiatric and treated as usual by the staff psychiatrists of this hospital. All films of the cranial CT were carefully inspected by one author (MY) and the records were analyzed at this time. In this series, 303 studies were taken for 260 patients of endogenous psychiatric disease. One hundred sixty cases of schizophrenia (some individuals with senile condition in addition to the old schizophrenia were included in this group), 77 cases of affective disorders (mainly mania and depression), and 23 cases of atypical psychosis were involved in this endogenous psychiatric category.

On the other hand, 93 patients with their chief complaints of headache, light headedness, or vertigo in the departments of medicine or surgery of Maikodai Hospital in Tarumi-ku, Kobe were examined by X-ray CT and inspected by the same author. These control cases were not considered to have psychiatric disorders when checked by their clinical records.

The findings of CT were routinely inspected and classified roughly into 2 groups: the normal and abnormal one. The latter was additionally described in detail: like atrophy, slight atrophy, enlargement of the ventricle (s), abnormal calcification in the brain parenchima, low density area indicating the infarction(s), and others.

The statistical analysis was performed by chi square test at the significance level of P<0.05.

RESULTS

As presented in Table 1, the CT findings in the schizophrenia group showed more incidence of abnormal ones even in the young population. Abnormal findings of CT in detail are described below. Fifty five patients under age of 39 had 5 cases of abnormal calcification, 5 cases of slight cerebroal atrophy, 4 cases of the localized enlargement of the ventricle, 2 cases of the cavum septi pellucidi, and one other case. Normal studies were obtained from 38 individuals out of 55 (69.1 %). From 40 to 49 of age, 4 cases of the slight atrophy and one each of the calcified and the ventricular abnormality were observed. Twenty cases (76.9 %) revealed normal study. Incidence of abnormal findings in the group of age up to 49 years was significantly higher than the control group of same age class (P<0.001).

The group of ages from 51 to 64 contained only 22 (45.8 %) normal scans. Eight slight atrophies, 6 atrophies, 2 calcifications, 7 ventricular abnormalities, and 3 others were observed in this group. The ratio of normal/abnormal incidence was also significantly different when compared with the control group of the same age (P<0.05).

Over 65 years old, the normal scans were only 4 cases out of 31 (12.9 %). When compared with the same age group in the control (Table
Table 1. Schizophrenia group

<table>
<thead>
<tr>
<th>Age</th>
<th>CT Findings</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Abnormal</td>
<td>Normal</td>
</tr>
<tr>
<td>-49</td>
<td>23</td>
<td>58</td>
</tr>
<tr>
<td>50 - 64</td>
<td>26</td>
<td>22</td>
</tr>
<tr>
<td>65 -</td>
<td>27</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>76</td>
<td>84</td>
</tr>
</tbody>
</table>

4), significant difference was proved at P = 0.001. Nine cases of the slight atrophy, 8 cases of the lacunar strokes, 5 cases of the atrophy, 2 cases of the ventricular abnormality, and one calcification case were found in this group.

The group of the affective disorders shown in Table 2 gave insignificant difference when compared with the control in all subgroups of ages. No significant difference was proved when compared with the schizophrenia groups.

Findings of the atypical psychosis (Table 3) also showed no significance when compared with the control. The number of cases might be, at this time, small for the conclusive evaluation by statistics.

The incidence of the cavum septi pellucidi was shown in Table 5. Higher incidence was not proved in the schizophrenia group when compared with other ones.

Table 2. Affective Disorder Group

<table>
<thead>
<tr>
<th>Age</th>
<th>CT Findings</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Abnormal</td>
<td>Normal</td>
</tr>
<tr>
<td>-49</td>
<td>1</td>
<td>12</td>
</tr>
<tr>
<td>50 - 64</td>
<td>12</td>
<td>24</td>
</tr>
<tr>
<td>65 -</td>
<td>19</td>
<td>9</td>
</tr>
<tr>
<td>Total</td>
<td>32</td>
<td>45</td>
</tr>
</tbody>
</table>

DISCUSSION

In the schizophrenia group, statistically high incidence of the cerebral abnormality on CT study was reported (1,2,3). In the elderly population, much more CT abnormality were observed with a statistical significance. Non-specific factors which accelerate the cerebral atrophy caused by schizophrenic behavior might exist on the elderly patients, possibly due to lack of positive mental work which stimulates the cerebral blood flow reactively. Or long term hospitalization might effect on their diet or on physical exercise in daily life. However, a significant more incidence of the CT abnormality in the young generation may indicate a possibility of specific pathological process in the schizophrenic patients, as suggested by Takahashi et al (1). Shimada et al (2) compared by sever-
ity of schizophrenic disorders and reported that the more atrophic findings on CT related to the clinical severity with statistical difference.

Other groups of the endogenous psychiatric disorders failed to show significant difference at this time. Patients in the affective disorder group often seemed to show normal CT study. Bossche et al also found no evidence of brain atrophy in the unipolar depression (6). Since the size of atypical psychosis cases was small, no conclusive description was obtained at this instance. Additional cases may contribute meaningful result in future.

A pathological state in the septum pellucidum area, cavum septi pellucidi, is usually considered to be a congenital condition. Although traumatic process of the condition has been proposed before (4,5), the mechanism of this cyst formation may be actually unclear (7). George et al reported that the relationship between schizophrenia and abnormality of the septum pellucidum (8). In our series of CT studies, no distinct evidence of the septal abnormality have been shown in any psychiatric disorders.

REFERENCES


Table 5. Incidence of CSP*

<table>
<thead>
<tr>
<th>Group</th>
<th>CSP</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>92</td>
<td>1</td>
</tr>
<tr>
<td>Psychosis</td>
<td>254</td>
<td>6</td>
</tr>
<tr>
<td>Total</td>
<td>346</td>
<td>7</td>
</tr>
</tbody>
</table>

*CSP: Cavum septi pellucidi