

INCENDIARISM AND LOCALIZED RIGHT CEREBRAL LESION

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Abstract: A right-handed male with hemisphere lesion arrested due to impulsive incendiarism. His mental state was investigated for the forensic assessment. He was diagnosed with dementia due to head trauma. He was suffering from personality change due to organic brain lesion after a traffic accident. In spite of the severity and volume of the lesion, he showed very mild neurological and neuropsychological signs. He had some impairment in reality testing or communication and severe impairment in judgment, thinking and mood. He was also in a catastrophic state. He had no responsibility at the time the offense was committed.

Index Terms

right hemisphere lesion, impulsiveness, catastrophic reaction

CASE REPORT

Case history

C is a right-handed man in his fifties who was referred to the department of psychiatry, Nara Medical University, for forensic assessment of his mental state. He had committed arson at his apartment house on Dec. 6, 1994. He presented strange behaviors at the police station. His prosecuting attorney interrogated him and decided to proceed to forensic assessment of his mental state, since his motive for committing the criminal act was unclear and the attorney felt he had been insane at the time the offense was committed.

The patient has no family history of psychiatric disorders. He was born on Mar. 20, 1939. His father was a worker for a public bathhouse. He graduated from a junior high school at fifteen and obtained a job in a disposable chopsticks factory. He got married at twenty-seven with his girl friend, who was also working for the same factory. When his wife underwent an operation for pregnancy abortion, he made an untrue explanation to his employer. Later he was discharged due to his untrue explanation. After that, he made a living by working as a construction day-laborer. Although he was very short-tempered and intolerant, he did not become violent. His wife stated that he had no special abnormality and no personality disorder in those days. Eventually, they had five children, one boy and four girls.

On July 14, 1972, he met with a traffic accident on his way home and suffered a head trauma. He was brought to Nara National Hospital and underwent an emergency operation. The

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details of the trauma and operation are unclear, because the medical chart was lost. He was in critical condition and in a coma state for nineteen days. He was discharged on Sep. 29. After that, he frequently complained of his headache and consulted his physician. Since he had no intention to work and his wife was taking care of their small children, their stipend was defrayed from the local government according to the Livelihood Protection law. He became very short-tempered and explosive; he sometimes struck, kicked, and threw things at his wife and children over trifles.

For almost one year around 1974, he worked for the public hygiene center and engaged in collecting garbage and working as a cremator. Diverting himself, he began to drink sake or beer. Gradually he abandoned himself to drinking and quit working. He was admitted to a mental hospital due to alcoholism twice, from Jan. 25 to Mar. 14, 1981, and from Sep. 25, 1981 to Jun. 19, 1982. A debt (300,000 yen) which he kept secret from his family was exposed in 1987. At that time he was arrested for stealing a bicycle.

These days he is not violent against his children, because they have grown up and are stronger than him. When he is short-tempered and throws things over trifles, he is attacked by his children. He is very obedient to his son. His son ordered him to give up drinking, and he keeps his abstinence. He occasionally steals money from his daughters' room. One of his daughters always quarrels with and actually spansks him.

The last day of Sep. 1994, he had a quarrel with, and spoke insultingly to, a next door neighbor woman. Her son overheard this quarrel and lost his temper with him. Immediately he shouted loudly in front of his apartment. Frightened, the patient hid himself and did not respond. After this event, he became bizarre; he kept indoors, rarely took baths, spoke to himself and took meals four or five times a day.

On the evening of Dec. 5, the day before the offense, he stole an orange from his daughters' room. His daughter attacked him with a coat hanger and wounded his forehead. On the morning of Dec. 6, the day of the criminal act, he was scolded and abused by his wife and children, since he ate a piece of omelet and a piece of ham. He flew into rage and set fire to his apartment house.

Medical investigation

His skull was deformed in the right central-temporal area. His left visual field is disturbed outside. The muscle tonus of left upper and lower limbs was spastic. The muscle stretch reflexes of biceps, triceps, brachioradialis, and knee jerk were accentuated on the left side. Babinski sign was positive on the left side. The serum levels of thyroid hormone were within normal limits. The serum levels of thyroid stimulating hormone, growth hormone, and cortisol were $6.7 \mu\text{U}$ (normal level: 0.4 to $5 \mu\text{U}$), 4.6 ng (0 to 2.3 ng), and $20.7 \mu\text{g}$ (4.3 to $10.7 \mu\text{g}$), respectively. These findings suggest central dysregulation of the endocrine system.

Plain radiography of the skull showed postcraniotomy change. Computerized tomography demonstrated multiple and spacious low density lesions in the right temporal lobe, right parietal lobe, and right occipital lobe (Fig. 1). Magnetic resonance imaging exhibited low signal lesions in T1 imaging (Fig. 2) and high signal lesions in T2 imaging (Fig. 3), which were also demonstrated in CT. Single photoemission computerized tomography showed low blood circulation areas in the right frontal lobe, right parietal lobe, and right occipital lobe.

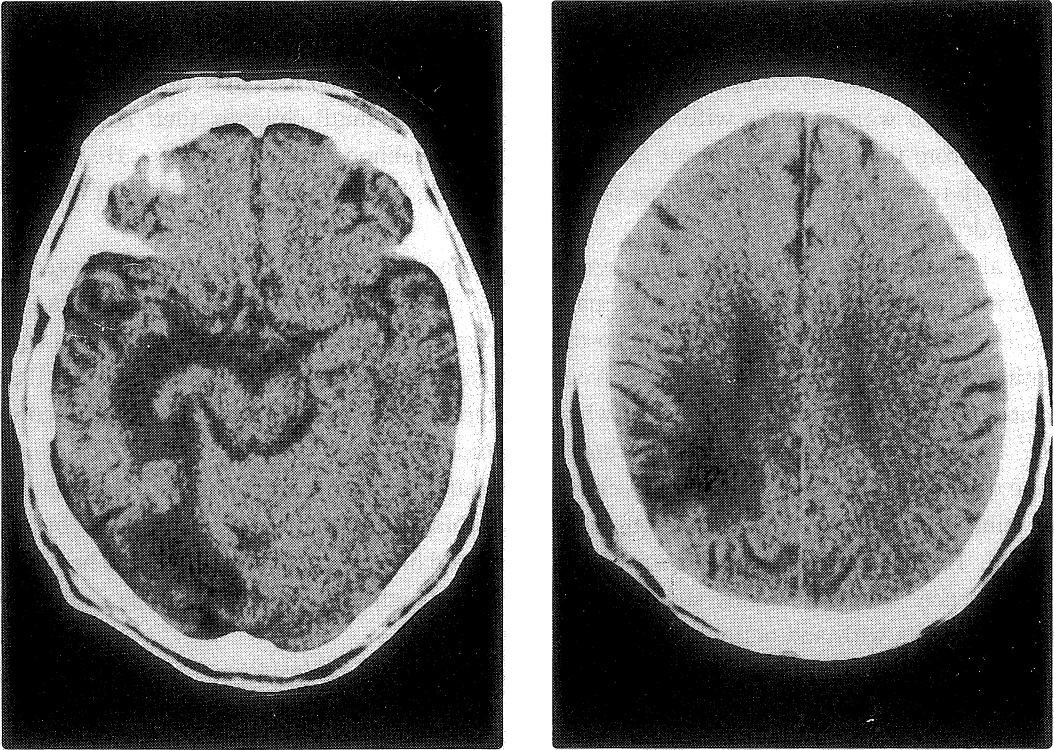


Fig. 1. CT show the localized spacious right hemisphere lesion.

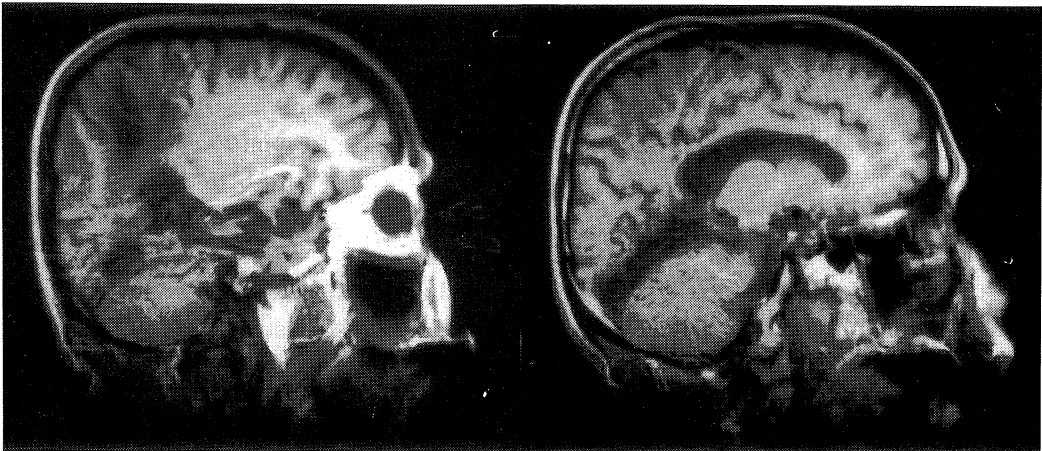


Fig. 2. MR imaging (T1) shows the lesion of parietal lobe and occipital lobe of right hemisphere.

Psychiatric investigation

The patient was fully conscious and oriented. He was, however, very irritable, manneristic and guarded, anxious, refusing to answer most questions. He admitted his guilt, but he showed an impaired ability to think ethically and abstractly, and had no insight.

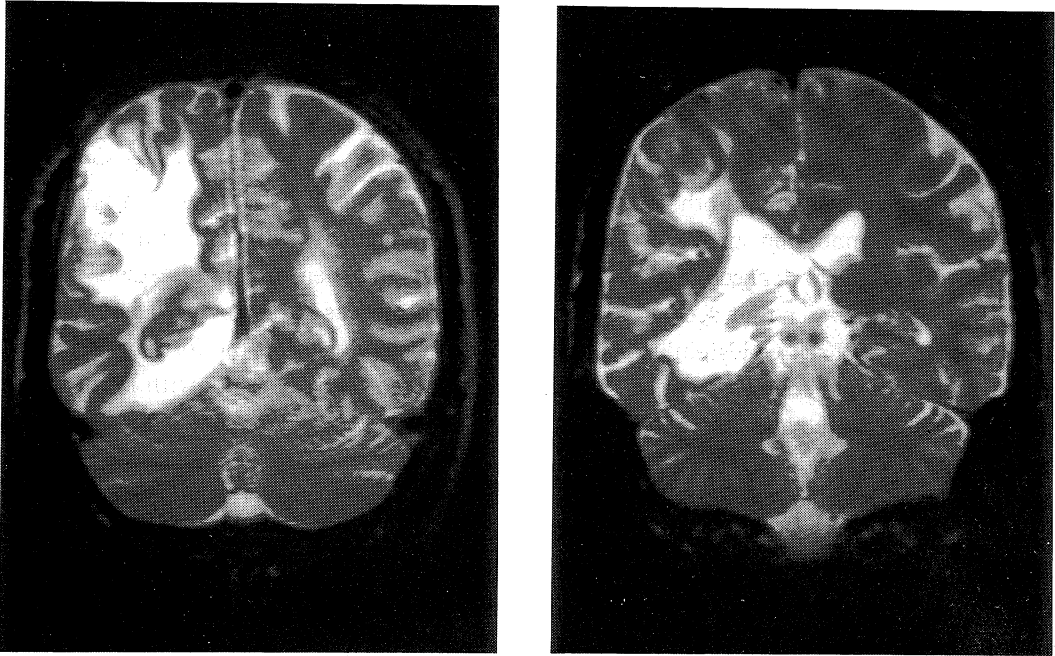


Fig. 3. MR Imaging (T 2) shows the lesion of temporal lobe (from superior temporal gyrus to hippocampal gyrus) of right hemisphere. Right hippocampus is not detected.

Detailed psychological assessment revealed a full scale intelligence quotient (IQ) of 47, and a mental age of 7.5 years. Draw a Person Test (DAP) showed that his mental age was 5.6 years according to Goodenough method. Bender Visual Motor Test showed a disorganized Gestalt, indicating brain damage. Rorschach Test showed that total response, human movement response, animal movement response, color response, and popular response were 15, 0, 1, 3, and 2, respectively. These results indicated that he had lost his ability to examine the reality of life and became very impulsive, emotionally labile and maladaptive to his environment ; he appeared to be suffering from schizophrenia or organic brain disease. The ratio of Unusual Verbalization was 3.7, negating the possibility of schizophrenia.

Neuropsychological examination showed that the offender has no problems in spontaneous speech, repetition, auditory comprehension, reading, and writing. He did not show any type of aphasia or agnosia. He showed very mild impairment of construction praxis and ideational praxis.

These findings showed that the posttraumatic brain lesion changed his personality. That is, his personality change was attributed to the brain lesion.

Diagnostic formulation

His DSM-IV diagnostic formulation (American Psychiatric Association, 1994) included : axis I, Dementia due to head trauma ; axis IV, Problem with primary support group, quarrels with his family and neighbor ; axis V, Global assessment of functioning scale 31, some impairment in reality testing or communication, and major impairment in several areas, such as work, family relations, judgment, thinking, or mood.

DISCUSSION

The patient was suffering from personality change due to organic brain lesion. In spite of the severity and volume of this lesion, he showed very mild neurological and neuropsychological signs. In the literature, right hemisphere lesion has been shown to cause indifference¹⁾, impairment of judgment of mood in others²⁾, and impairment of comprehension of nonverbal humor³⁾. His brain lesion made him unable to test reality or communicate with others normally. His right hemisphere lesion caused him to become impulsive and then to commit arson.

His behavior disorder that seemed bizarre was interpreted as catastrophic behavior, which was introduced by Kurt Goldstein⁴⁾. This symptomatic behavior takes the form of an inability to carry on a simple course of action once it is interrupted. The patients with brain organic lesion become agitated and fearful and more than usually inept when presented with one simple task that they can no longer do. His arrest, or his trouble with the neighbor was enough to induce the occurrence of catastrophic reaction. Gaianotti⁵⁾ categorized the behavior of patients according to the presence or absence of emotional behaviors. Left hemisphere lesions produced significant increases in the probability of catastrophic behaviors, whereas right hemisphere lesions produced significant increases in indifference reactions. Although this intriguing experiment has been widely cited in both the neuropsychological and psychiatric literature, we believe that these results must be interpreted cautiously. First this case of right hemisphere lesion showed catastrophic behaviors. Second, occurrence of aphasia with left hemisphere lesion and unilateral neglect with right hemisphere lesion are significant factors in predicting occurrences of catastrophic and indifference reaction, respectively. Third, according to Kolb⁶⁾, catastrophic or indifference reactions occur rarely following surgical excision of neocortex and more commonly in patients with naturally occurring lesions, which presumably include subcortical damage. Discussions of Gainotti's study have ignored these factors, but they are clearly important to any conclusions that may be drawn from this provocative work. It should be adequate that he was in the catastrophic state due to right hemisphere lesion.

His brain organic lesion was attributable to the traffic accident twenty-three years before, because : 1) after the head trauma his violent behaviors and alcoholism began ; 2) he has no sign of alcohol dementia ; and 3) postcraniotomy change of the skull was coincident with the lesion. Therefore his personality change might have occurred soon after his recovery from head trauma.

As to his criminal responsibility, he was insane, i. e. in a catastrophic and demented state at the time the offense was committed. Therefore he has no psychiatric responsibility, no legal action for punishment will be taken. He should be admitted to a mental hospital by the Governor of Nara Prefecture under the Mental Health Act.

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