

## CASE REPORT

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# Autopsy Cases Among Patients with Mental Disorders: An Unusual Case of Asphyxia Caused by the Iron Roller of a Garbage Truck

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**ABSTRACT:** A case of asphyxia of a young man suffering from "Identity Disorder" as delineated by the DSM-III-R (American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders revised in 1987) is reported. The patient jumped into the drum of a garbage truck and the iron roller in the drum asphyxiated him by compression. In addition to the presentation of this rare category of the DSM-III-R disorders as an autopsy case and an unusual means of asphyxia, we briefly reviewed other autopsy cases of the patients with mental disorders who died in Japan between 1988 and 1992.

**KEYWORDS:** pathology and biology, asphyxia, identity disorder, garbage truck, iron roller, mental disorders, borderline personality disorder, DSM-III-R

According to the "Autopsy Yearbook" edited by the Medico-Legal Society of Japan [1], the number of autopsy cases between 1988 and 1992 of miscellaneous deaths among patients with mental disorders (excluding organic or psychoactive substance use disorders), exceeded that of homicides caused by patients with confirmed mental disorders which seem to attract much more attention (Table 1). The number of miscellaneous deaths did not increase remarkably from year to year (1988: 46, 1989: 42, 1990: 51, 1991: 64, 1992: 63) and they accounted for only a small proportion of the total number of the autopsy cases (1988: 3515, 1989: 3233, 1990: 3451, 1991: 3689, 1992: 3692) including unidentified victims and a considerable number of cases without psychiatric anamneses. However, the summary of the patient histories in the yearbook suggests that unexpected self-destructive behavior among patients with diseases other than schizophrenia or mood disorders has often caused death. However, as shown in Table 1, the name of the disease is usually "not mentioned" in the summary.

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Cultural considerations in the application of a diagnostic criteria in countries other than the criteria's country of origin should not be ignored, judging from the reported differences in the distributions and symptoms of personality disorders [2] and a report on suicide statistics, which pointed out the close connection with economic factors in Japan and with domestic factors (divorce and high risk births) in the United States [3]. However, in some reports in Japan [4,5], careful diagnoses and application of each criteria based on the accumulated cases elucidated some general pattern of the abnormal behavior that might predict suicide and other fatal accidents.

We report a case of a young man diagnosed as having an "Identity Disorder" according to the DSM-III-R (American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders revised in 1987) [6]. An "Identity Disorder" is an infrequent diagnosis, but the symptoms of this disease are similar to those of more common psychiatric diseases like schizophrenia or mood disorders and a danger of misdiagnosis exists [6,7]. Although his behavior had seemed relatively normal, he wandered around the town uneasily, jumped into the drum of a garbage truck, and died of asphyxia when he was crushed by the iron roller in the drum.

### Case Report

A 21-year-old man who had received outpatient treatment for a previously diagnosed "Identity Disorder" and who worked as a carpenter was wandering near a construction site along a city street at about 9:50 p.m. He apparently appeared uneasy, was muttering gibberish, and was evidently in pain. A patrolman present at the site called for an ambulance but the young man subsequently wandered further southward along the street.

TABLE 1—Autopsy cases related to psychiatric patients (1988–1992).<sup>a</sup>

	Homicide cases	Death cases	Total
Schizophrenia	47	66	113
Mood disorders	19	48	67
Others	2	10	12
Not mentioned	100	142	242
Total	168	266	434

<sup>a</sup>From "Autopsy Yearbook" edited by the Medico-Legal Society of Japan.

He reached the point where a garbage truck was in operation. As shown in Fig. 1, one worker (or sometimes two as shown in the figure) has a foothold on the back of this type of truck where garbage is deposited. After the garbage is thrown into this entrance, the driver of the truck switches on an iron roller following a signal from the worker and garbage is forced into the drum of the truck by the roller. The truck and the collection process apparently attracted the interest of the young man. He asked the worker to allow him to stand on the other foothold of the truck. The worker rejected this entreaty partly because he was busy working and partly because remarks by the young man such as "I've run away from home" and "I'm going to do something important" aroused his suspicion. The young man nonetheless climbed onto the vacant foothold. The worker noticed, but said nothing because the young man looked uneasy when the siren of the ambulance that the patrolman of the construction site had called approached and his expression made the worker fearful. According to the worker, the young man seemed afraid of the siren sound or something then.

The truck, with the young man on board, moved northward toward the next collection point. The worker, while keeping an eye on the young man, continued to load garbage. The young man evidently jumped into the iron roller during a short time when he was not under observation, and the operating roller compressed him (Fig. 2). Although the ambulance arrived shortly thereafter, the young man was pronounced dead at 10:38 p.m.

No drugs, including the psychoactive substances indicated in the DSM-III-R [6], were detected during the postmortem analysis.

### Major Autopsy Findings

The autopsy was performed approximately 17 hours after death. The body was 171 cm in height and weighed 64 kg. Incomplete development or malnutrition was not noted. Light red postmortem lividity was noted on the back. The face was generally congestive and several petechiae were present in the conjunctivae. Small pericardial and submucous hemorrhages, remarkable in the stomach, were also observed.

Subcutaneous hemorrhages were noted on the chest and back, and the right 5th through 9th and the left 6th through 9th ribs were fractured. Intramuscular hemorrhages were present in the neck and the upper part of the chest. Minor abrasions and contusions were



FIG. 1—Garbage truck of the same type involved in the accident, showing two men on the foothold and between them, the entrance to the drum.



FIG. 2—Scene of the accident showing the crushed victim.

observed on the back of the head, face, back, shoulders, arms, left hip, and right leg.

Contusions were observed on the lower lobe of the lungs, the upper part of the liver, and the spleen. The left thoracic cavity contained 140 mL of blood, there was a little blood in the right thoracic cavity, and the abdominal cavity contained 70 mL of blood.

### Discussion

The findings mentioned, notably the minimal amount of bleeding (about 210 mL of internal bleeding and slight external bleeding), suggest that death in this case was caused instantly by asphyxia. As shown in Table 2, among psychiatric patients, asphyxia was the most frequent cause of death reported in the "Autopsy Yearbook." The self-destructive cases were mainly caused by hanging, while strangulation (six cases) or smothering (four cases) was also suspected as a cause of death in some psychiatric patients. All the cases of traumatic asphyxia (three cases) were caused by others including other psychiatric inpatients. Among the "others" recorded as accidental deaths in this table, 23 psychiatric inpatients died as a result of various fatal injuries caused by other violent inpatients, reflecting some reports in other countries [8,9]. The summary of one of these 23 injury cases states that the chest of the deceased was heavily compressed, although other injuries were more severe and were the apparent cause of death. Among the traffic accident cases (five cases), neither the involvement of a garbage truck nor asphyxia by compression was reported.

The patient in this report had been previously diagnosed as having an "Identity Disorder," one of the "Disorders Usually First Evident in Infancy, Childhood, or Adolescence," using the criteria in the DSM-III-R [6]. As defined in the manual, he was suffering from severe subjective distress regarding uncertainty about a variety of issues relating to identity. He was evaluated long and carefully enough to meet the diagnostic criteria of "Identity Disorder" when he was an outpatient. The physician in charge reports that the young man was in a state of mild anxiety and depression and complained of self-doubt and doubt about the future, with specific mention of his parents' divorce. With respect to the diagnostic criteria for "Identity Disorder," this patient seemed to have severe and lasting subjective distress regarding uncertainty about "long-term goals," "career choice," and "friendship patterns" rather than the other four issues ("sexual orientation and behavior," "religious identification," "moral value systems," and "group loyalties"). His

TABLE 2—Causes of death among psychiatric patients (1988–1992).

Causes of death		Schizophrenia	Mood disorders	Others	Not mentioned	Total
Accidental cases	Asphyxias	12	12	2	20	46
	Drownings	11	11	4	19	45
	Burns	8	5	0	12	25
	Poisonings <sup>a</sup>	7	5	1	6	19
	Falls	6	3	1	3	13
	Freezings	2	3	0	8	13
	Traffic accidents	1	0	0	4	5
	Others <sup>b</sup>	10	3	1	32	46
Natural death cases	8	3	1	26	38	
Undetermined	1	3	0	12	16	
Total	66	48	10	142	266	

<sup>a</sup>Out of the 19 cases, 7 deaths were caused by accidental or intentional overdoses of legal psychotropic drugs.

<sup>b</sup>This category includes deaths caused by cutlery and pointed weapons (16 cases) and deaths caused by firearms (1 case).

impulsiveness was suggestive of "Borderline Personality Disorder" [10], but the physician, after some interviews, had come to the conclusion that his disturbance was not sufficiently pervasive or persistent to warrant this diagnosis. No medication or hospitalization was prescribed as his previous behavior was not abnormal enough to suggest the mentioned impulsive activity or suicide. His "accident" seemed to be related to primitive fear suggestive of "Identity Disorder" as activated by the siren sound just before the "accident." Although the existence of the disturbances typically seen in the suicide [11] or self-wounding [12] cases of "Borderline Personality Disorder" or the delusions seen in the cases of "Schizophrenia" cannot be denied completely, no prodromal symptoms suggestive of them were revealed until this "accident." It is possible that "something important" mentioned by this patient means some criminal act in order to run away from the uncertainty about a variety of issues relating to identity rather than a planned or groundless suicide. Neither his history nor the postmortem drug analysis suggested drug abuse.

The major problem in evaluating the autopsy records of psychiatric patients in Japan is the common failure to clearly delineate a diagnosis (Tables 1–3), since the records are written by medical examiners who do not have enough data about the deceased, or who do not refer to the psychiatric data during their examination. Cases other than schizophrenia or mood disorders may be less obscure than statistics suggest. Judging from the summary of the "Autopsy Yearbook," the majority of the cases comprise patients in the 30 to 50 year age range. These cases clearly exceeded the adolescent cases in frequency (Table 3), and, judging from the

summary, might include some self-destructive cases from other categories such as "Delusional Disorder," "Anxiety Disorders," "Dissociative Disorders," and "Sleep Disorders," which are reported to be common in this age group [6]. However, little data have been accumulated on fatally abnormal behavior. In the Mental Health Act in Japan, restriction of behavior is pointed out and discussed even after "voluntary admission" (article 22) [13,14]. With respect to the cases in the "Autopsy Yearbook," such a restriction does not seem to aid in the prevention of unexpected self-destructive behavior.

Although a previous report collected data on the prodromal symptoms of schizophrenic patients [5], the general lack of data, notably on patients suffering from psychological ailments other than schizophrenia, seems to make meaningful intervention and prevention of self-destructive behavior difficult. In this case, no prodromal symptoms of schizophrenic patients who commit suicide were noticed. As a previous report suggests, very few studies on "Identity Disorder" have been carried out since the introduction of this term in 1983 [15]. The situation is the same in Japan, although the symptoms associated with the deterioration in identity, including those of "Identity Disorder," are closely monitored and paid attention to [7], suggesting the increase of this disease. Self-destructive cases of psychiatric patients, especially patients with infrequent diseases like "Identity Disorder," without revealed prodromal symptoms suggestive of suicide when they are outpatients seem to be unpredictable. However, careful examination of each case might make some "rather prodromal" symptoms clearer. The author intended to call the attention to self-destructive cases of such psychiatric patients by mentioning a few "rather prodromal" symptoms and the situation of death of the patient. In this case, impulsive "fear" seemingly triggered by the siren sound and specific mention of the parents' divorce when he was an outpatient may contribute to a better understanding.

TABLE 3—Age and sex distributions of the autopsy cases of psychiatric patients (1988–1992).

Age	Schizophrenia	Mood disorders	Others	Not mentioned	Total
11–20	3–0(3)	1–0(1)	0–0(0)	3–1(4)	7–1(8)
21–30	5–10(15)	3–1(4)	0–2(2)	12–5(17)	20–18(38)
31–40	5–10(15)	4–6(10)	0–3(3)	18–16(34)	27–35(62)
41–50	8–9(17)	5–6(11)	0–2(2)	32–14(46)	45–31(76)
51–60	8–5(13)	4–8(12)	2–0(2)	10–12(22)	24–25(49)
61–70	2–0(2)	0–8(8)	0–0(0)	9–2(11)	11–10(21)
71–80	1–0(1)	0–2(2)	0–1(1)	4–3(7)	5–6(11)
81–90	0–0(0)	0–0(0)	0–0(0)	0–1(1)	0–1(1)
Total	32–34(66)	17–31(48)	2–8(10)	88–54(142)	139–127(266)

Values: Male number-female number (total).

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