

## CASE REPORT

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**Sudden unexpected death due to Fournier's gangrene**

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**Abstract** A 43-year-old Japanese male vagrant collapsed suddenly in a police station. The man was resuscitated in hospital but died about 13 h later. An autopsy revealed necrotizing fasciitis in the genitalia and lower abdominal wall. The man was considered to have died from endotoxic shock following on Fournier's gangrene.

**Key words** Sudden death · Fournier's gangrene · Cerebral contusion · Frontal syndrome

**Introduction**

Fournier's gangrene is a necrotizing fasciitis of the genitalia and perineum which may extend to the anterior abdominal wall, buttocks or lower extremities. The principal aspects of treatment of this syndrome are adequate drainage, debridement and systemic antibiotics. In spite of recent advances in treatment the mortality rate is still high [1] because the syndrome rapidly progresses into endotoxic shock or DIC. This report describes a case of sudden and unexpected death from Fournier's gangrene.

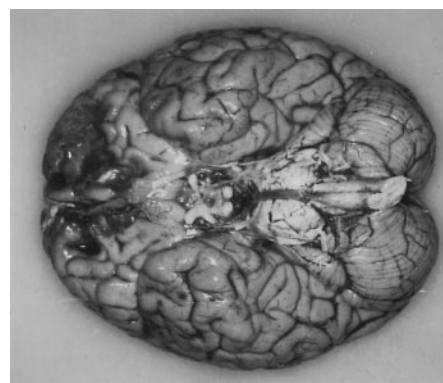
**Case report**

A taxi driver took a 43-year-old Japanese male vagrant to a police box in the early morning as he refused to pay the taxi fare. In a brief interview by the police, he admitted that he had no money and had hailed the taxi with no intention of paying the fare. The man was arrested and taken to a police station. Before being placed in custody, the man was searched and ordered to strip by a policeman. At that time the policeman found him to be very dirty and his scrotum and penis were swollen. Two open wounds in the head and forehead were also noted. The policeman asked about any other medical complaints and the man denied any. About 9 h later, the man suddenly complained of diarrhoea and pains in the foot

and was taken to hospital. After physical examination, a physician concluded that the man could not tolerate long detention because of severe anemia brought on by starvation and should be admitted into another hospital. So the police took him back to the police station to undergo the procedures for his release and telephoned to the city hall and other offices for him to receive hospital treatment. During these formalities, the man suddenly complained of severe headache and collapsed. He was immediately taken to a hospital but died about 13 h later. Although a CT scan examination revealed low density areas in the frontal lobes and a physician considered the lesions to be a possible cause of death, an autopsy was carried out to confirm the cause of death and the time when the two open wounds in the head and forehead had been inflicted.

**Autopsy findings**

The corpse showed severe pediculosis corporis throughout. In the head and forehead, there were two small open lacerations which had been inflicted by blunt force and were microscopically shown to have arisen 1 week or more before his death. The brain showed old contusions on the inferior aspects of both frontal lobes (Fig. 1) and the histological appearances of the contusions showed them to be of at least several years duration. The penis and scrotum which were reddish and swollen, showed partial excoriation (Fig. 2). The cut surfaces of the thickened scrotal wall were edematous (Fig. 3) and the subcutaneous tissue of the lower abdominal wall was dusky reddish (Fig. 4) but gas bubbles were not observed. Histologically, the subcutaneous tissues of these areas revealed severe granulocytic infiltration and necrosis (Fig. 5). Prominent prolifera-



**Fig. 1** Bilateral old contusions on the inferior surfaces of the frontal lobes

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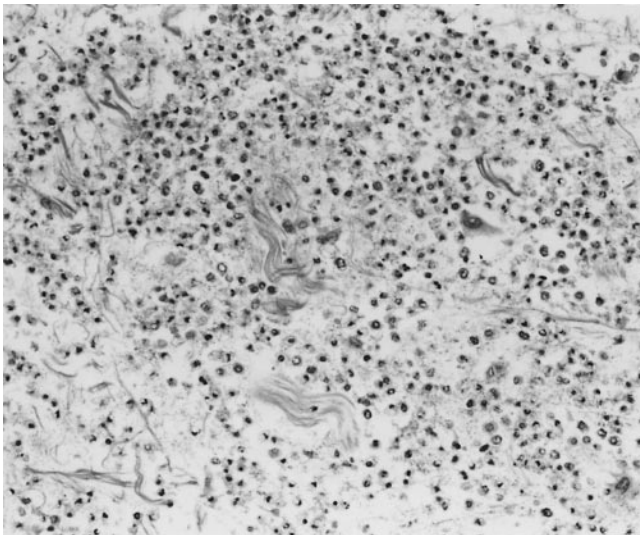
**Fig. 2** Swollen and discoloured penis and scrotum with partial excoriation



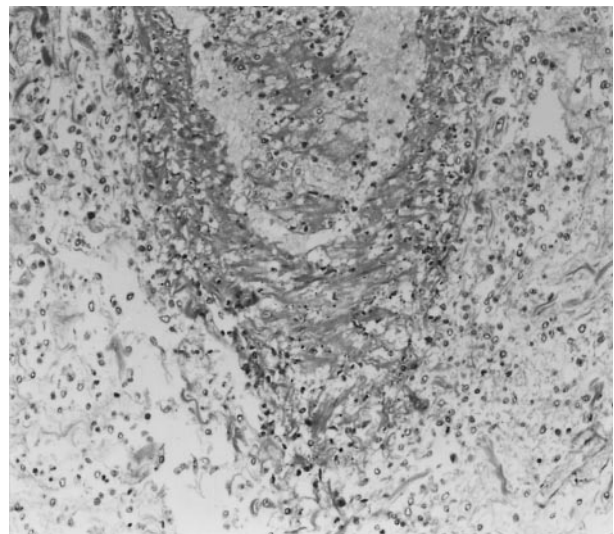
**Fig. 3** Cut surface of the thickened scrotal wall appears edematous



**Fig. 4** Subcutaneous tissue of the lower abdominal wall is dusky reddish



**Fig. 5** Photomicrograph of the scrotal wall showing severe granulocytic infiltration. HE  $\times 200$



**Fig. 6** Photomicrograph of the subcutaneous tissue of the lower abdominal wall showing arteritis. Thrombosis is also observed. HE  $\times 140$

tion of Gram-positive organisms was also observed, but culture and identification of the organisms were not carried out. Another histological finding in these areas was thrombosis of the small subcutaneous vessels due to an arteritis probably due to direct bacterial damage (Fig. 6). These findings indicated that this vascular damage was caused by organisms that produced the gangrene and resulted in ischemia and allowed further proliferation of the organisms. Other histological findings were focal hemorrhagic necrosis in the adrenal cortex, pulmonary edema, myocardial degeneration and bronchopneumonia. Although a clinical diagnosis of anemia due to starvation had been made by a physician, the autopsy did not reveal any signs of malnutrition and alcohol-induced organ changes.

## Discussion

Fournier's gangrene is a rare infectious disease of the genitalia and perineum. The infection was first described by Jean Alfred Fournier [2] as an idiopathic gangrene of the

genitalia and is classically characterized by three findings: 1) abrupt onset in a healthy young male, 2) rapid progression to gangrene and 3) absence of a specific causative agent. Today, the syndrome is not limited to young individuals, nor limited to males [1]. A specific aetiological factor could also be identified in the majority of patients. Anorectal infections, genito-urinary infections and traumatic injuries are the most common causes of the infection [1, 3–7]. Gangrene is also known to occur in association with systemic risk factors such as diabetes mellitus [3–5], chronic alcohol abuse [3–5], malignancies [3], steroid medication [4] and AIDS [8]. In the present case, pediculosis in the genitalia may have been a cause of the infection in association with the filthy condition of this site.

In spite of recent advances of treatment with antibiotics and surgical procedures, the mortality rate in Fournier's gangrene is still high and exceeds 40% in some series [3, 7]. The gangrene extends rapidly along the dartos and fascial planes of the penis and scrotum, Colles' fascia of the perineum and superiorly along Scarpa's fascia of the abdominal wall. In some series [4–6], patients

frequently showed clinical features of DIC or shock, such as acute respiratory and/or renal failure. In the present case, hemorrhagic necrosis of the adrenal cortex, pulmonary edema and myocardial degeneration, which are frequent findings in septic or endotoxic shock, were considered as evidence that the deceased died from endotoxic shock following Fournier's gangrene.

Fournier's gangrene is a rare infectious disease. To our knowledge, this is the first report in the forensic literature, although much forensic interest has been focused on the role of bacterial toxins in sudden unexpected deaths [9]. In Japan, less than 90 cases of the syndrome have been reported [10]. The syndrome is so rare in Japan that in the present case the diagnosis of Fournier's gangrene was not made before the autopsy. In spite of its rarity, sudden death from this syndrome may be of forensic interest.

The deceased also showed old contusions of both frontal lobes. About 10 years ago, the man fell from a height during work and received a severe head injury. Before the accident, he had been an ordinary worker and the police had not had any contact with him, except in connection with a traffic accident. But after this event he stopped working and became a vagrant and since then he was arrested many times by the police. He frequently stole liquor among other things and he was convicted three times in court: twice for theft and once for swindling for which he received an 8-month custodial sentence. The old contusions on the inferior surfaces of both frontal lobes could explain the dramatic changes in his personality, a lesion often loosely denoted by the term 'frontal syndrome' [11]. The syndrome is characterized by disinhibition, euphoria, lack of self-criticism, lack of tact and concern, lack of insight, irresponsibility, egocentricity, childishness, blunting of emotional responsiveness, loss of emotional control, loss of initiative, apathy, and inertia [12]. The frontal syndrome is rarely caused by a unilateral lesion, but is more severe after bilateral frontal lobe in-

juries. This case clearly illustrates the need for a close contact between social welfare authorities and the police.

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