



Case Report

An autopsy case of a homeless person with unilateral lower extremity edema

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ABSTRACT

We present an autopsy case of a homeless person showing remarkable unilateral lower extremity edema, which was strongly associated with the cause of death. A 55-year-old homeless man without any past medical history was found dead in a flophouse. External examination showed evidence of malnourishment and remarkable swelling of the right, lower extremity. Putrefactive discoloration in the same area was evident at the time of autopsy (approximately 30 h post-mortem). The autopsy revealed focal pneumonia in the right lower lobe, dehydration and chronic pancreatitis. Dissection of the edematous extremity revealed massive abscess formation in the subcutaneous tissue and superficial fascia around the right knee joint. Histopathological findings were compatible with necrotizing fasciitis and blood chemistry results showed an elevation of HbA1c (6.3%). The cause of death is considered to be necrotizing fasciitis and secondary pneumonia/dehydration. This case suggests that necrotizing fasciitis should be differentiated during post-mortem diagnosis, especially in cases showing lower extremity edema with early putrefactive changes. In addition, forensic pathologists should closely examine a lower extremity of such cases to detect a true cause of death, even if other pathological findings which can be a cause of death, such as pneumonia and dehydration, are observed in major internal organs.

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1. Introduction

Medical examiners often encounter deceased individuals with bilateral lower extremity edema at inquest scenes. Bilateral lower extremity edema, which is usually a manifestation of generalized edema, and failure of vital organs (e.g., heart, liver, kidney) are commonly listed as causes of edema in the whole body [1]. Thus, if a decedent with bilateral, lower extremity edema also shows signs of illness, such as congestive heart failure or liver cirrhosis, medical examiners justifiably suspect that the cause of death may have resulted from the progress of the illness.

A decedent with unilateral, lower extremity edema is, on the other hand, less frequently encountered. Unilateral lower extremity edema is generally caused by regional problems (e.g., regional obstruction of venous or lymphatic flow, trauma) [1]. This increases the difficulty of judging whether the cause of edema was associated with the cause of death, based only on the external investigation. Here, we present an autopsy case showing remarkable unilateral, lower extremity edema and early putrefactive changes. In this case, the autopsy revealed a strong association of the edematous extremity with the cause of death, deep soft tissue infection (necrotizing fasciitis).

2. Case report

A 55-year-old man was found dead on a bed in a flophouse. He had lived on the streets for a long time, and came to the flophouse 2 weeks before his death. Seven days before his death, he requested a cold patch; however, there was no evidence as to how it was used. The individual complained of appetite loss on the day before his death, but he did not consult a doctor. An external examination performed approximately 12 h after his death, did not reveal any open injuries, but did reveal remarkable right, lower extremity edema with slight purple-green discoloration (Fig. 1a). No past or present diseases were evident that involved right, lower extremity edema, which may have suggested the cause of death.

A forensic autopsy was carried out about 30 h after his death. The decedent was 160 cm tall and weighed 41 kg (body mass index of 16.0). Upon autopsy, greenish, putrefactive discoloration was prominent in the right, lower extremity (Fig. 1b). Upon dissection of the body, moistness in the serous membrane of the thoracic/abdominal cavity was disappeared, and right lower lung was slightly indurated. Other macroscopic findings of internal organs included an atrophic, indurated pancreas and a muddy discoloration in the red pulp of the spleen. Dissection of the discolored skin of right lower extremity disclosed the absence of a fracture, but did reveal the presence of a massive abscess in the subcutaneous tissue and superficial fascia, mainly around the right knee joint (Fig. 2). The underlying muscle did not appear to be extensively involved. Abscess formation was not observed in the

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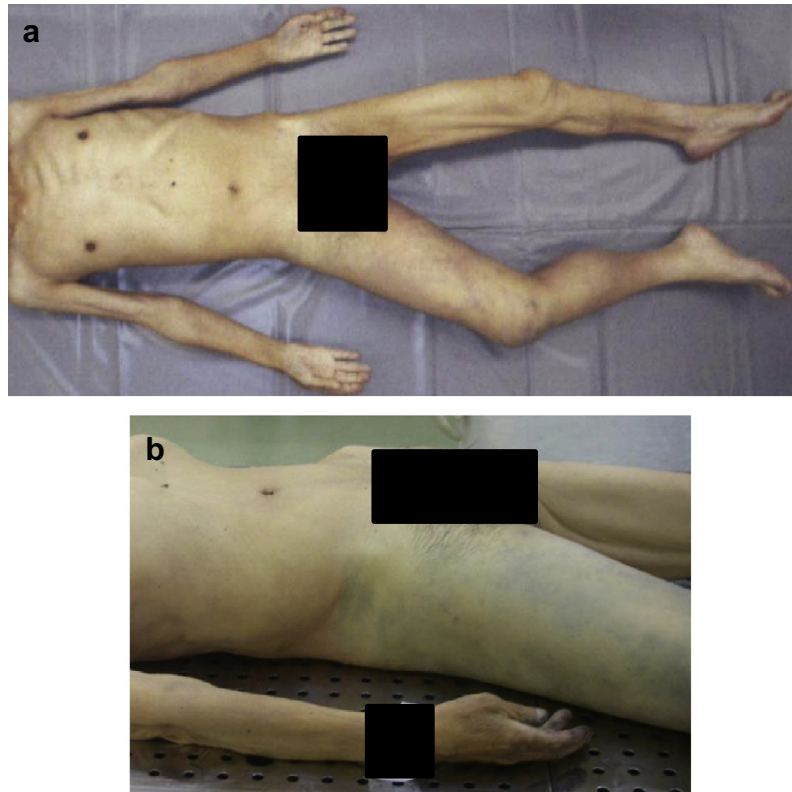


Fig. 1. Appearance of the decedent. (a) Remarkable right, lower extremity edema with slight purple-green discoloration (approximately 12 h after death). (b) Putrefactive change was prominent in the right lower extremity at autopsy (approximately 30 h after death).



Fig. 2. Macroscopic findings of the right lower extremity. Dissection of the skin of the right lower extremity disclosed massive abscess formation in the subcutaneous tissue and superficial fascia, mainly around the knee joint.

pelvic space or around the rectum, and thrombi were not observed in the right external iliac artery or vein. Microscopic examination showed plentiful neutrophil infiltration in the subcutaneous tissue around the right knee and the perimysium of the right vastus lateralis muscle (Fig. 3a and b); some of the muscle cells were necrotic (Fig. 3b). Thrombi were seen in several micro-vessels in the subcutaneous tissue. Acinar atrophy, dilation of ducts and fibrosis were observed in the pancreas. Other findings included

patchy neutrophil infiltrations in the right, lower lung, acute tubular necrosis in the kidney and an increased number of plasma cells and macrophages in the red pulp of the spleen. No pathological findings relevant to cause of death were observed in other internal organs. Blood chemistry results showed an elevation of acetone (5.7 $\mu\text{g}/\text{mL}$) and HbA1c (6.3%) levels. *Escherichia coli* were cultured from the abscess. Any drugs were not detected from blood and gastric content by toxicological analysis. From the autopsy findings, the

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