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Lethal Clostirium Septicum Infection. Proof of a Direct Bacterial Invasion of a Simple Skin Bruise from the Necrosis Zone of the Colon Cancer - A Case Report

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Introduction

Myonecrosis due to gas gangrene without open wounds and severe soft tissue destruction is a rare entity. However, several cases have been reported in literature strongly indicating an association between metabolic disorders or malignancies and gas gangrene [1-24]. In most of these cases Clostridium septicum was identified [2-4,6-12,14,16-20,23], whereas other species are rarely found in spontaneous gas gangrene [1,13,15,21]. The coherence however is only evidence based due to a lack clinical of pathological facts. In cases where a myonecrosis of an extremity occurs together with a localized adenocarcinoma of the colon the possibility of a bacteremia is considered by various authors [2,3,5,7,8,12,14,15,20] but the way of infection remains speculative [2,6,15].

Case History

We report a lethal gas gangrene in the right thigh of a patient with a clinically undetected adenocarcinoma of the colon ascendens. The myonecrosis occurred after a fall on the right hip with a simple contusion and no open wound.

An eighty-seven-year-old woman was referred to the hospital after a fall on the floor. A syncope of unknown cause was suspected. The physician on duty examined her and he recognized a hematoma on the right hip and local pain but did not see an indication for a radiological examination. The patient was sent to the ward. Six hours later, the patient developed pyrexia, peripheral cyanosis and decreased blood pressure. Because of the clinical signs of respiratory insufficiency with central lung congestion, the patient was intubated. When the surgeon was consulted there were clinical (**Figure 1**) and radiological signs (**Figure 2, 3a,b**) of gas gangrene and the patient was immediately submitted

Figure 1: Clinical aspect of the contusion of the right hip with gas gangrene. The gangrene has already invaded the right thigh.

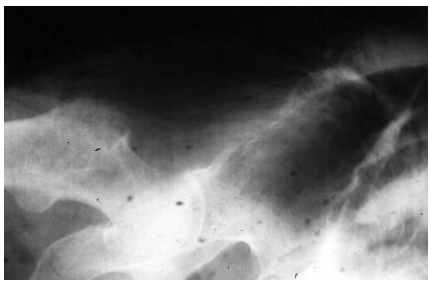

Figure 2: A.p. x-ray of the right gluteal region with the typical gas distribution in the muscles.

to an extensive excision of the infected tissues. The wound was irrigated with hydrogen solution and left open. Intravenous antibiotics were given. The patient survived the first days with a decrease of infection parameters but died after 5 days due to cardiac and renal insufficiency.

The result of the intraoperatively taken swab showed clostridium septicum sensitive to the clinically applied antibiotics.

At autopsy, the pathologist found a superficially ulcerated adenocarcinoma of the right colon flexure with a covered

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perforation and a dove-egg sized empyema in the greater omentum with signs of local peritonitis. The tumor was in the vicinity of the hematoma separated by the abdominal wall (see CT-scan in **Figure 3a**). The histological findings revealed a direct bacterial invasion of the contused skin from the necrosis zone of the cancer.

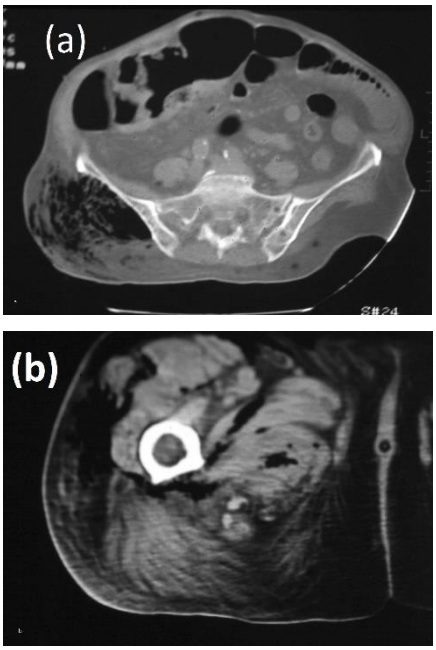

Figure 3: CT-scan of **(a)** pelvis region showing the vicinity of the bowel and the infected gluteal region and **(b)** the right thigh with gas in the muscles and subcutaneous areas.

Discussion

The coincidence of colon carcinoma and myonecrosis due to Clostridium septicum infection is well recognized in literature [2-12,14,16-19,22-24]. Kornbluth *et al.* [7] collected 162 case reports of non traumatic clostridium septicum infections in the literature until 1989 and found eighty-one percent associated with malignancies. Thirty-four percent of the reported cases had associated colon carcinoma. Larson *et al.* 1995 published another large number of clostridial infections where the authors found 50 % of the cases associated with various malignancies [11]. Although some metabolism disorders (i.e., diabetes mellitus) or immunosuppressive therapy are reported in the context of spontaneous gas gangrene [1,6,7,11,16,18,21] most of the reported cases emphasize the association with malignancies either diagnosed or occult at the time a myonecrosis occurs. Among these, a hematological malignancy is the most frequent entity followed by adenocarcinomas of the colon [7,16]. The frequent association of malignancies and gas gangrene gives evidence, but the causality is not proven on the base of pathologic findings.

To our knowledge the here described case for the first time reveals the direct, causal connection between a cancer of the colon and the myonecrosis of an extremity due to clostridium septicum. The pathomechanism in this case can be described as follows: The fall on the right hip caused a contusion of the soft tissues around the greater trochanter leading to a local tissue hypoxia in the vicinity of an occult perforated cancer of the colon that was adherent to the abdominal wall. Out of the tumor mass, the bacteria invaded the hematoma where they found ideal conditions to grow and spread.

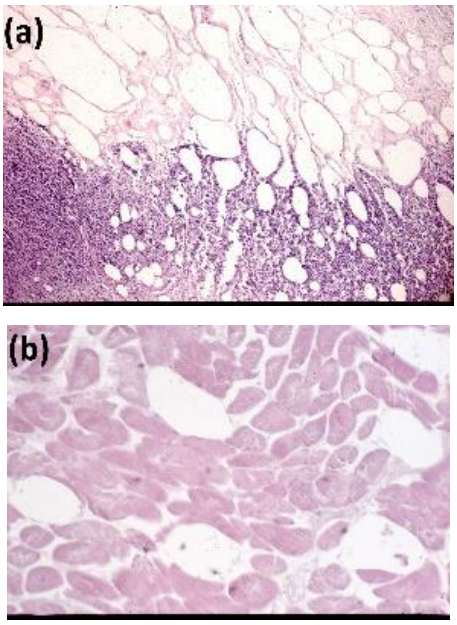

Figure 4: Histological section **(a)** Overview showing the border of the peritumoral abscess and the transition to the gas infiltration of the necrotizing muscles **(b)** Detail showing the non-reactive necrosis of the muscle tissue with gas infiltration.

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