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Secondary Hepatic Portal Venous Gas with Appendiceal Abscess: Unusual and Fatal Complication

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Abstract **Case Report**

Introduction: The portal vein gas is a radiological sign that corresponds to the presence of area in the portal system. It is a rare entity associated with high mortality. Its main cause is intestinal necrosis. Other etiologies have been reported in the literature. We report an exceptional case of hepatic portal vein secondary to an appendicular abscess. ***Observation:*** 54-year-old patient, diabetic on oral antidiabetic drugs, admitted to the emergency department for abdominal pain with fever. The examination found a fever at 39° C, unstable hemodynamic state. The abdominal examination was found defense of the right iliac fossa. Biology confirmed the infectious syndrome, with functional renal failure, normal lactatemia. After conditioning, the abdominal-pelvic CT scan which revealed a collection in the right iliac fossa with an inflamed and sterolithe appendix, and portal vein gas. The vascular axes and the digestive wall were well opacified. The patient was admitted to the operative room. A laparotomy was performed. The exploration found an appendiceal abscess with a perforated gangrene appendicitis, intestine had a normal appearance without evidence of ischemia. The patient had an intraoperative cardiopulmonary arrest and died as a result of septic shock. ***Conclusion:*** The intestinal necrosisis the first diagnosis to discuss in front of an portal vein gas, nevertheless, other etiologies although they are less frequent must not be ignored. A good knowledge of the physiopathological mechanism of the portal vein gas allows to consider other non-surgical differential diagnosis.

Keywords: Portal vein gas; appendiceal abscess; radiology.

INTRODUCTION

The hepatic portal vein was first described en 1955 by Wolfe and Evans in infants with necrotizing enterocolitis [1]. It is a radiological sign that corresponds to the presence of area in the portal system. Often associated with intestinal necrosis, the discovery of a portal vein gas scanner may pose a problem of etiological diagnosis and therapeutic, many other etiologies have been reported in the literature. We report an exceptional case of portal vein gas secondary to an appendiceal abscess.

OBSERVATION

54-year-old patient, diabetic on oral antidiabetic drugs, admitted to the emergency department for abdominal pain with fever. The examination found a patient in bad general condition, fever at 39° C, tachycardia with a blood pressure 10/6mmhg, the abdominal examination found a defense in right iliac fossa. Biology has confirmed the infectious syndrome, with functional renal failure, normal lactatemia. Abdominal-pelvic CT scan, which revealed a collection at the right iliac fossa an inflamed and sterolitic appendicitis, In the liver parenchyma images. hypodense, rounded, predominant on the periphery of the left of liver, evoking an portal vein gas (figure: 1; 2). The vascular axes as well as the digestive wall were well opacified (figure: 3). The patient was admitted to the operative room. A laparotomy was performed. The exploration found an appendiceal abscess with a perforated gangrenous appendageat its base of implantation, the intestin had a normal appearance with no sign of ischemia. The patient had an intraoperative cardiopulmonary arrest and died as a result of septic shock.

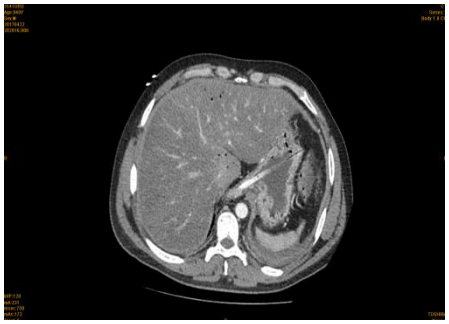

Fig-1: CT scan showing area in the intrahepatic portal system

Fig-2: CT scan showing good opacification of vascular axe

Fig-3: CT scan showingappendicealabscess

DISCUSSION

Long assimilated to necrotic mesenterici schemia, the presence of air in the porto-mesenteric system has been the subject of numerous descriptions in the literature. Several pathophysiological mechanisms have been evoked [2, 3]:

- Alteration of the digestive wall can go into inflammatory diseases (Crohn) or intestinal ischemia.
- Increased intraluminal pressure leading to an increase in gas resorption (digestive endoscopy)
- Intra-abdominal infection, the gas present in the mesenteric-portal system, may result from intra-luminous fermentation, microbial traction, or the development of microabcess dissecting the meso and causing a communication of the abscess with venules, or finally bacterial spread in the branches of mesenteric and portal veins [4-6]. This is the case of our patient who presented a serious chart of quick evolution towards the septic shock without visualization of air bubbles at the level of the primitive infection.

Appendiceal infectious pathology is common, but the occurrence of portal vein gas during this condition is exceptional. The problemis to link this portal gas vein to peritoneal infection and not to ignore an associated intestinal ischemia, sometimes only surgery can decide.

Radiologically, the presence of air in the portal system can be seen in the X-Ray abdomen without preparation, a large amount of air is needed for it to be visible on the standard radiology, the left lateral decubitus pictures increase the sensitivity of these examinations. The portal vein gas is in the form of a gas arborization at the level of the liver [6]. Ultrasound coupled to Doppler has a sensitivity superior to X-Ray and equivalent to CT Scan, air bubbles are in the form of hyperechoic signals moving in the hyperechoic direction of blood flow in the portal vein. At the hepatic level they are in the form of fine lines with sometimes an acoustic shadow wih peripheral and central distribution [7, 8]. The CT scan is of diagnostic and etiological interest, the CT appearance corresponds to hypodense tubule or round images localising mainly in the left and predominantly peripheral liver [5, 6, 9]. In our case the amount of air waslow, on the scanner we had images of small peripheral air bubbles. The use of the pulmonary window in this case is very useful [2].

The differential diagnosisis posed radiologically with the pneumobilia, the gaseous images in this case are more larger and have a central distribution, often the clinical context has a great value of diagnostic orientation [6]. The portal vein gas not a pathology but a radiological sign +/- serious, the prognosis is related neither to the quantity of air nor to the duration of evolution, it is especially related to the causal pathology. The improved prognosis reported in the literature may be due to the development of radiology that can detect minimal airway output that may go unnoticed on standard radiology [10].

The discovery of portal vien gas can pose a therapeutic problem especially in front of a medical pathology where the surgical intervention is not envisaged, the obsession is to miss to an intestinal ischemia, the most frequent etiology of the disease. In this case, the scanner has an important role, sometimes an exploratory laparotomy is required [5].

CONCLUSION

The intestinal necrosis is the first diagnosis to discuss in front of a portal vein gas, nevertheless, other etiologies although they are less frequent must not be ignored. A good knowledge of the physiopathological mechanism of the portal vein gas allows to consider other non-surgical differential diagnosis

Consent

Written informed consent was obtained from the patient for publication of this case report and any accompanying images.

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Competinginterests

The authors declare that they have no competing interests.

Authors' contributions

All authors contributed to the treatment of the patient and to the conception, writing, and revision of the manuscript. All authors read and approved the final manuscript.

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