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Case Report - Olgu Sunumu

AIR IN THE PORTAL VEIN: A CASE REPORT OF PORTAL VEIN AIR IN COW MILK ALLERGY

PORTAL VENDE HAVA: İNEK SÜTÜ ALLERJİSİNE BAĞLI PORTAL VENÖZ HAVA İLE İLİŞKİLİ VAKA TAKDİMİ

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Özet

Ultrason raporlarında portal vende hava ile karşılaşılması, bağırsak duvarının bütünlük kaybını gösterebileceğinden klinisyen için endişe vericidir. Ancak ultrason teknolojisinin gelişmesi ile çok detaylı bulguların saptanması mümkün hale gelmiş ve klinik pratikte portal vende havanın daha iyi huylu nedenleriyle karşılaşılabilir olmuştur. Bu vaka takdiminde benign bir portal venöz hava sebebi sunulmuştur. Sunulan hasta inek sütü alerjisine bağlı barsak mukozasındaki bütünlük kaybına bağlı portal venöz hava geliştirmiş bir pediatrik hastadır. Her ne kadar portal vende hava görünmesi geleneksel olarak endişe uyandırıcı bir bulgu olarak değerlendirilse de klinisyen daha radikal girişimlerde bulunmadan önce olası iyi huylu nedenlerin de buna yol açmış olabileceğini aklında bulundurmalıdır.

Anahtar Kelimeler: Portal venöz hava, mezenterik iskemi, mukozal bütünlük kaybı.

Abstract

Air in the portal vein in ultrasound reports is worrisome for the clinician as it might indicate bowel wall disintegration. However, with the advent of ultrasound technology, detection of subtle findings became possible and more benign causes of the portal vein are encountered in the clinical practice. A benign case was presented in this report. The patient was an example of mucosal integrity disruption due to cow milk allergy. Although portal vein air is traditionally an ominous sign and should alert the clinician about catastrophic conditions, the clinician should also be aware of more benign aetiologies, before taking radical actions.

Keywords: Portal vein air, mesenteric ischemia, mucosal disintegration.

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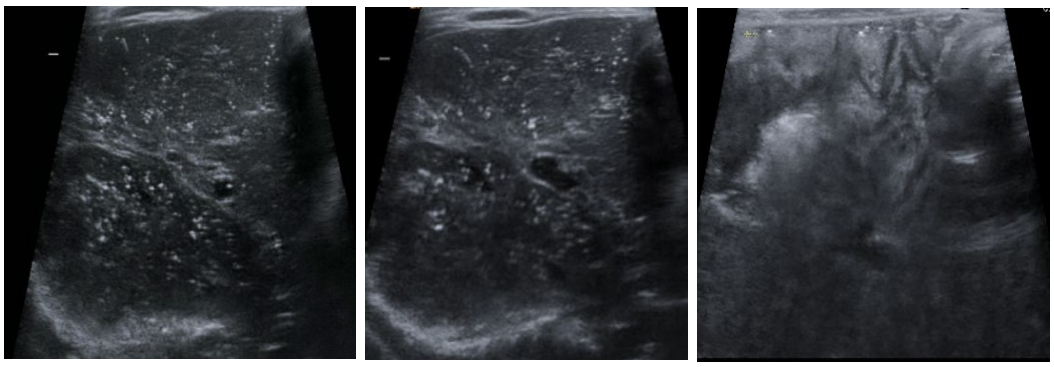
1. INTRODUCTION

Air in portal venous system is traditionally an ominous sign that warrants urgent action. (Liebman et al., 1978, pp.281-7) The most important red flag is the probability of mesenteric infarct. However, due to technological improvements in ultrasound technology we encounter it more frequently and should be aware of its more benign aetiologies in order to prevent false alarm and unnecessary perturbations. In this case presentation the major aim was presenting a case with benign condition, cow milk allergy leading to portal vein air and discussion of this entity to differentiate from more dangerous ones.

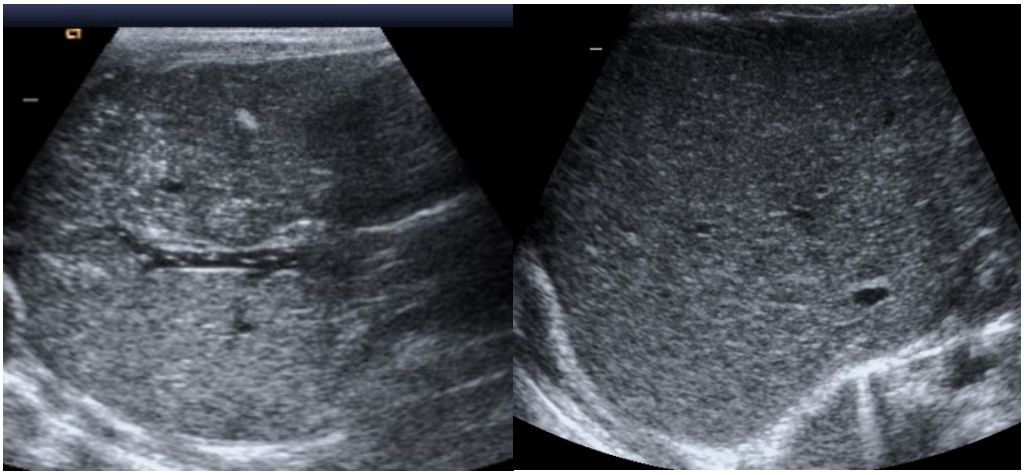
2. CASE

6 months old male patient admitted emergency department because of bloody diarrhoea. Clinical work-up was unremarkable. Ultrasound was performed to rule out invagination. Ultrasound revealed moving echogenic dots in portal vein reaching to distal venules and accumulating in periportal areas as well (Figure 1). Since his abdominal examination did not warrant any surgical emergency, paediatric surgeons preferred to follow up. The parents were advised for feeding scheme change which formerly involved cow milk-based diet. Follow up ultrasound three days later revealed clearance of some of the parenchymal air and persistence of small amount of intraportal air. Control ultrasound examination after cessation of bloody diarrhoea one week later revealed complete clearance of all parenchymal and portal air (Figure 2). The patient diagnosed as having cow milk intolerance and discharged. Control ultrasound three months later revealed no abnormality.



1a) **1b)** **1c)**

Figure 1: Portal vein air at the time of diagnosis. a,b) Air particles accumulated in parenchymatous regions. Anteroposterior gradient representing gravity distribution was evident c) Tiny air drops were also present in bowel wall. The diagnosis was cow milk allergy.



2a) **2b)**

Figure 2: Follow-up imaging of the patient. a) Tiny echogenic particles in both parenchymatous regions and right portal vein representing air in the portal vein three days later. b) Clearance of the air in the 1 week follow up due to mucosal repair.

3. DISCUSSION

Although air in the portal vein is traditionally considered as an ominous sign with about 75 percent mortality (Liebman et al., 1978, pp.281-7), recent publications revealed that this argument has to be changed and the actual mortality rate was much lower, 39 percent (Nelson et al.,2009, pp.575-81).

Mortality rate mainly depends on the aetiology and the pathophysiological mechanism which leads to the portal vein air. The improvements in the ultrasound technology permit us to depict actual aetiology of portal vein air in various pathological situations and ultrasound might be the only modality which could detect the tiny air drops over rapidly flowing blood.

The characteristic ultrasonographic findings are highly echogenic particles flowing in the portal vein and highly echogenic punctiform patches within the hepatic parenchyma mainly in non- dependent portions conforming to the direction of the portal blood flow (Pan et al., 2007, pp.1179-83). This distribution is important to differentiate it from pneumobilia which tends to accumulate centrally because of the flow direction of bile (Yarze and Markowitz, 2007, pp. 1476-7). When one encounters portal gas, a thorough evaluation and search for gas in the bowel wall, gas in other splanchnic vessels, aperistaltic or hypoperistaltic dilated bowel segments, free intraperitoneal air or intraabdominal septic conditions should be searched. Every effort should be employed to rule out bowel wall ischemia which renders portal gas as an ominous sign. Although completely not understood yet, the main mechanisms explaining gas in the portal vasculature falls in a few categories. One of the most important factors is disruption of mucosal integrity of gastrointestinal tract due to ischemia, infection, inflammation, or intraluminal increased pressure in association with gas forming bacteria over proliferation. The other important factor is iatrogenic which can be in the form of catheter placement, vascular interventions, post anastomosis or postoperative (Bassam et al., 2009, pp. 3585-90). Gas may ascend in the systemic veins and retrograde move into hepatic parenchyma may be encountered. (Shah et al., 2011, pp. 1403-13)

Actually, portal vein gas in our patient was due to mucosal integrity disruption due to cow milk allergy. If there is no bowel obstruction or necrosis, intraabdominal abscess, or sepsis, portal venous gas may be a transient finding without clinical relevance as the occasion in our patient (Chezmar et al., 1989, pp.1203-5).

4. CONCLUSION

Portal venous gas is neither pathognomonic for bowel wall necrosis nor a catastrophic finding with the state-of-the-art ultrasound equipment. Various benign conditions may be presented with this sign. Coincidence of serious illness and portal venous gas in ultrasound examination should not distract the examiner from searching the actual responsible pathology leading to the destructive process before blaming bowel wall necrosis as the sole cause regarding the relative frequency of this finding in various benign conditions.

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