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Idiopathic acute chylous peritonitis during pregnancy, mimicking perforated acute appendicitis: A case report

Sharie Apikotoa*, Ruwan Wijesuriya

St John of God Hospital, Midland. 1 Clayton Street, Midland, 6056 Western Australia, Australia

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ABSTRACT

INTRODUCTION AND IMPORTANCE: Chylous ascites (CA) is an extremely rare presentation in pregnancy and poses a diagnostic challenge in clinical practice. There have only been a few case reports of CA in pregnancy with the majority of cases found incidentally at the time of caesarean section or in the context of pancreatitis.

CASE PRESENTATION: A 36-year-old female who was 13 weeks pregnant had clinically presented right iliac fossa pain with peritonitis and had signs of sepsis. Once other potential sources of sepsis were excluded, had proceeded to diagnostic laparoscopy performed by the treating consultant given there were no appropriate out-of-hours imaging modalities available.

CLINICAL DISCUSSION: This case report hopes to advocate for the effective intervention of a diagnostic laparoscopy in this setting and other important considerations for management during first trimester pregnancy. Upon diagnosis the patient was put onto a medium chain fatty acid diet with excellent outcomes post operatively and at the outpatient follow up. The case report has been reported in line with the SCARE 2020 criteria [11].

CONCLUSION: Chylous ascites is a rare finding and additionally is even more rare to cause peritonism. What we found most interesting in this case is that in the absence of any other potential sources of infection, how chylous ascites not only presented with peritonism but prompted a septic response. Another pertinent issue is that in pregnancy we are limited with investigative options and therefore diagnosis will depend on the clinical presentation and decision for prompt diagnostic/therapeutic laparoscopy should be strongly considered.

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1. Introduction

Chylous ascites is an uncommon occurrence and typically manifests as painless abdominal distention. Chylous peritonism is even more rare. There have only been a few case reports of CA in pregnancy with the majority of cases found incidentally at the time of caesarean section or in the context of pancreatitis. This case report hopes to advocate for the effective intervention of a diagnostic laparoscopy in this setting and other important considerations in management and has been reported in line with the SCARE 2020 criteria [11].

2. Patient information

A 36-year-old female who was 13 weeks pregnant with previously confirmed intrauterine pregnancy, presented to the emergency department with abdominal pain and fevers. There was

a 2-day history of gradual onset pain that was generally around the abdomen but felt that it was worse in the right lower quadrant and was particularly worse on movement. It was associated with nausea and multiple episodes of vomiting gastric content. No history of altered bowel habit and despite passing flatus felt mildly bloated. No abnormal vaginal discharge or per vaginal bleeding, no significant risk factors for sexually transmitted infections. She had a documented fever of 38.1 °C with the general practitioner. No history of un-intentional weight loss or night sweats. No recent travel overseas.

Past Medical/Surgical/Psychological history: No medical issues. G1P2: Normal vaginal delivery 6 years prior. No previous abdominal surgery. No psychiatric history.

Medications: No regular medications.

Social History: Non-smoker, non-drinker.

Family History: Nil significant malignancies.

3. Clinical findings

The patient looked generally unwell, heart rate 120, systolic blood pressure 100 and febrile 38.1 °C. There were no surgical

* Corresponding author.

E-mail addresses: Sharie.apikotoa@sjog.org.au (S. Apikotoa), Ruwan.Wijesuriya@sjog.org.au (R. Wijesuriya).

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Table 1
Investigations (Blood work up, bed side tests, fluid tests and histopathology).

Full blood count	Hb 134 g/L, WCC 17.4×10^9 /L, neutrophils 16.0×10^9 /L.
Urea, electrolytes, creatinine	Na 135 mmol/L, K 3.8 mmol/L, creatinine 49umol/L.
Liver function tests	Bili 8 umol/L, ALP 63 U/L, GGT 13 U/L, AST 22 U/L, ALT 36 U/L.
Lipase	124 U/L (normal range 70–390 U/L).
C- reactive protein	165
Urinalysis	Negative leukocytes, nitrites and blood.
Bed side USS	Confirmed intrauterine pregnancy and foetal heartbeat.
Appendix Pathology	Appendix with faecolith and small amount of acute inflammatory slough within appendiceal lumen; fibrous obliteration of tip of appendix; no evidence of acute appendicitis, dysplasia or malignancy.
peritoneal fluid	Triglycerides 15.7 mmol/L (1389 mg/dL), no organisms grown/cultures. Numerous leukocytes. Lipase 83 U/L.

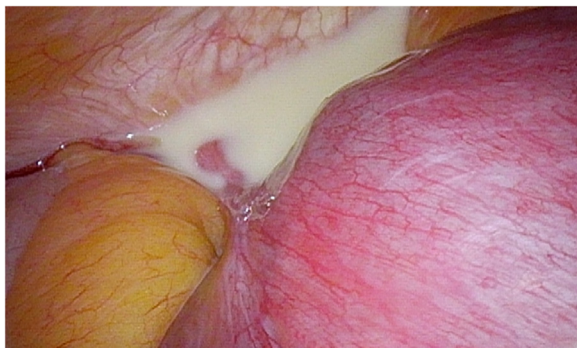


Image 1. Chyle seen in the right lower quadrant.

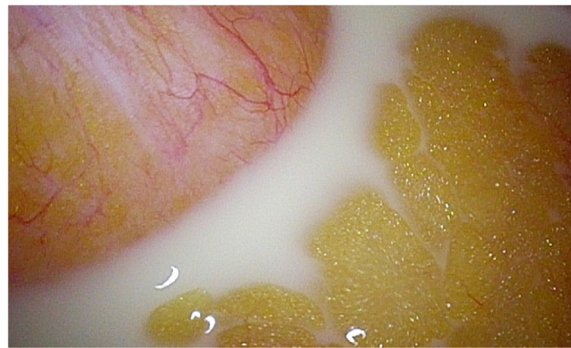


Image 2. Chyle seen in the left upper quadrant.

scars/bruising. Appropriately palpable uterus, tender abdomen but peritonitic in the right lower quadrant.

4. Timeline

On presentation to the emergency department the patient had baseline investigations performed and was assessed by the general surgical team on-call, within 6 h she proceeded to theatre for diagnostic laparoscopy performed by the treating/on-call surgeon with over a decade of consultant experience.

5. Diagnostic assessment

There were some considerable diagnostic challenges in this case. Given that the patient was pregnant, and she presented in after day working hours we were unable to perform an MRI abdomen after normal working ours in this peripheral hospital and therefore, given the clinical context, a decision was made to proceed directly to diagnostic laparoscopy. The table below documents the preliminary investigations in the work up as well as the diagnostic investigations at the time of laparoscopy (Table 1).

6. Therapeutic intervention

As the patient was meeting sepsis criteria, she was given broad spectrum intravenous antibiotics (IV Augmentin, 1.2 g TDS), fluid resuscitation and promptly prepared for a diagnostic laparoscopy after being cleared for gynaecological causes by the on-call obstetric and gynaecology team.

Intraoperatively, there was a “milky” fluid all through the abdomen with dilated lymphatic vessels seen on the surface of the small bowel. Macroscopically the appendix, ovaries, uterus, small bowel and stomach appeared normal. A decision was made to perform an appendicectomy for microscopic assessment. The fluid was suctioned, and a sample sent for microscopy, culture, lipase and triglycerides with abdominal cavity lavage and subsequent inser-

tion of an intra-abdominal drain. Photos taken intraoperatively show case the “milky” fluid (Images 1 and 2).

Post operatively, the patient remained on intravenous antibiotics and was assessed by the dietician day 1 post operatively and placed on a medium fatty chain acid diet with supplementation of medium chain triglyceride (MCT) oil. The drain remained intact until the output had reduced and was removed on the day of discharge (day 5 post operatively). The patient was discharged with 5 days of oral antibiotics (Augmentin DF 875/125 mg BD) along with ongoing outpatient dietician review. Total of 10 days of antibiotics (5 days of IV as an inpatient and 5 days poabs on discharge).

7. Follow up

The patient was seen in outpatient clinic 2 weeks post operatively and she was clinically well with no abdominal pain, no ongoing nausea or vomiting. The patient was adherent to the dietary recommendations and was advised she could slowly introduce fats into her diet along with her MCT oil. On questioning she had no issues with any of the prescribed therapies. There were no adverse events or complications in this situation.

8. Discussion

Chylous ascites is an infrequent presentation. In a study conducted in 1992, the incidence was found to be approximately 1 in 20,000 hospital admissions, this was performed at a large university based hospital over a period of 20 years [3].

The pathophysiology of CA can be grouped into 3 broad categories [3]:

1. Obstruction of the lymph flow causing a leakage from the dilated sub-serosal lymphatics.
2. Exudation of lymph through dilated retroperitoneal vessels that lack valves through a fistula, for example in congenital lymphangectasia.

3. Acquired thoracic duct obstruction from surgery or trauma.

In Western countries up to two-thirds of CA are due to abdominal malignancy, lymphatic abnormalities or cirrhosis. In comparison, in developing countries the majority of cases are due to infectious causes [2,10].

The gold standard for diagnosing chylous ascites is by identifying chylomicrons using lipoprotein electrophoresis, however this is not readily available and quite laborious. Many studies have established elevated ascitic triglyceride levels as the best parameter and the current consensus uses a cut-off of >200 mg/dL [6]. In this case report the patient had more than six times the cut off for diagnosing chylous ascites. Ascitic fluid can be evaluated further to characterize the fluid and may also suggest toward an aetiology of the CA (cell count/ culture, cytology, adenosine deaminase etc.) [6]. One of the weaknesses of this case report is that cytology was not conducted on the fluid sample to assess for potential precipitants.

A systematic review of CA symptoms has shown that majority of patients will present without pain but rather increased abdominal distention (81%) and only in 11% of cases presented with pain or peritonitis [8]. Other non-specific symptoms are also associated including, fever, diarrhoea, anorexia, malaise and nausea to name a few.

With less than 100 case reports of chylous peritonism in the literature, the proposed mechanism for peritonism in CA is controversial and specifically in this case why it prompted a septic response remains a mystery [1,9,4]. There have been suggestions that the pressure of the chylous fluid pooling into the right paracolic gutter and stretching of the mesenteries is what may potentiate the pain and peritonism on examination [5]. What can be seen is that almost always, these cases are diagnosed through surgical intervention and in this instance the patient responded well to the intervention.

Generally, the treatment of chylous ascites varies widely and of course depends on the precipitating cause. In those who present with an acute abdomen, surgery where possible is pertinent for establishing a diagnosis and allowing for assessment for potential causes as well as an opportunity to adequately drain the chyle [3]. For other presentations of subacute chylous ascites, establishing the cause and treatment of the cause is essential and in addition to this management by optimising nutrition strict medium fatty chain diet and in some cases TPN can be successful [3]. Medium fatty acid chain diet was implemented immediately post-operatively in this case report and continued with guidance from a dietician.

Where other measures have not been successful there may be a role for octreotide/somatostatin analogues, surgical ligation, embolization and transjugular intrahepatic portosystemic shunt in patients with cirrhosis if appropriate [7,1,2]. There have been several case reports documenting the success of octreotide in the treatment of CA. In this case study, it was opted not to commence octreotide to reduce unnecessary medications in a pregnant patient given the clinical improvement immediately post operatively.

A limitation to this case report is the role of antibiotics administered. Despite septic screening no obvious source of infection was found, and it is presumed that somehow the chyle prompted a systemic inflammatory response. Given that the patient presented with sepsis, on the balance of risk/benefit, a decision was made to give them early and continue on treatment until results were established on pending investigations.

9. Conclusion

Chylous ascites is a rare finding and additionally is even more rare to cause peritonism. What we found most interesting in this case is that in the absence of any other potential sources of infec-

tion, how chylous ascites not only presented with peritonism but prompted a septic response. Another pertinent issue is that in pregnancy we are limited with investigative options and therefore diagnosis will depend on the clinical presentation and decision for prompt diagnostic/therapeutic laparoscopy should be strongly considered.

Declaration of Competing Interest

None.

Sources of funding

None.

Ethical approval

Patient consent has been provided and ethics N/A.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Author contribution

Dr Sharie Apikotoa – design, data collection, interpretation writing the paper. A/Prof Ruwan Wijesuriya – Mentor through process and treating surgical consultant.

Registration of research studies

Not applicable.

Guarantor

A/Prof Ruwan Wijesuriya
Dr Sharie Apikotoa

Provenance and peer review

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None.

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