Pseudomyxoma Peritonei: Radiologic Insights into an Unusual Presentation with Non-Specific Symptoms

Tooba Shahbaz and Shabana Rizwan

Department of Radiology, Fazaia Ruth Pfau Medical College, Karachi, Pakistan

ABSTRACT

Pseudomyxoma peritonei (PMP) is an uncommon condition characterised by mucin accumulation in the peritoneal cavity, commonly originating from the appendix. Ovarian origins, as in this case, are less frequent. Due to nonspecific symptoms, diagnosis is often delayed, resulting in advanced disease. A 55-year postmenopausal female presented with intermittent abdominal pain and significant weight loss for 1.5 years. Imaging revealed a multi-loculated fluid-attenuation lesion with liver scalloping, caecal wall involvement, and bulky ovaries. Elevated serum CA-125 levels (92 U/mL) supported an ovarian aetiology. These findings confirmed advanced-stage PMP of likely ovarian origin. PMP poses diagnostic challenges due to its nonspecific presentation. This case highlights the importance of integrating imaging findings with serum markers to identify atypical origins. Radiologists play a crucial role in the early recognition, staging, and facilitating timely surgical management to improve patient outcomes.

Key Words: *Pseudomyxoma peritonei, Ovarian neoplasm, Peritoneal neoplasm, Abdominal pain, CA-125 Antigen*.

How to cite this article: Shahbaz T, Rizwan S. Pseudomyxoma Peritonei: Radiologic Insights into an Unusual Presentation with Non-Specific Symptoms. *JCPSP Case Rep* 2025; **3**:445-447.

INTRODUCTION

Pseudomyxoma peritonei (PMP) is an uncommon neoplastic condition characterised by the accumulation of gelatinous fluid within the abdominal cavity, originating from mucin-producing tumours. While the appendix is the most common primary site, PMP can also arise from other locations. Its prevalence is estimated to be 1–2 cases per million individuals, which can increase to 3–4 per million in surgical cases, with a higher incidence in females compared to males.[1]

Herein, we present a case of a 55-year postmenopausal female who presented with intermittent abdominal pain and significant weight loss for 1.5 years. Imaging studies and elevated serum CA-125 levels supported an ovarian aetiology.

CASE REPORT

A 55-year postmenopausal female presented with intermittent abdominal pain persisting for 1.5 years. Initially attributing the symptoms to gastric issues, she self-medicated with omeprazole. She reported significant weight loss during this period.

Correspondence to: Dr. Tooba Shahbaz, Department of Radiology, Fazaia Ruth Pfau Medical College, Karachi, Pakistan
E-mail: toobashahbaz16@gmail.com

Received: February 11, 2025; Revised: June 01, 2025; Accepted: July 29, 2025
DOI: https://doi.org/10.29271/jcpspcr.2025.445

The patient underwent an ultrasound of the whole abdomen, revealing a well-defined anechoic fluid collection with internal septations below the right diaphragm. The fluid was loculated, exerting a compressive effect on the liver and extending into the right lower quadrant, where it showed an indistinct interface with the caecal wall at the ileocaecal junction. The left ovary was bulky with a volume of 17 ml, while the right ovary and uterus were unremarkable.

Subsequently, a contrast-enhanced computed tomography (CECT) scan of the abdomen and pelvis was performed, confirming the presence of a thick-walled, multiloculated fluid-attenuation lesion measuring 21 × 6.1 × 4.9 cm (Craniocaudal-CC × Anteroposterior-AP × Transverse-T) in the right peritoneal cavity (Figure 1). Internal enhancing septations were identified. The lesion extended superiorly along the right lateral margin of the liver, scalloping its surface. Inferiorly, it reached the right lower quadrant, where it demonstrated an indistinct interface with the caecal wall, which showed mild thickening (4.4 mm).

Additionally, a small, enhancing nodular lesion (12.2 × 13.7 mm) was noted in the mesenteric fat along the left anterior abdominal wall, accompanied by mesenteric fat stranding (Figure 2). Free fluid with a CT density of 35 HU was observed in the abdomen and pelvis. Both ovaries were bulky and heterogeneous; the right ovary measured 15.8 mL and the left ovary measured 17 mL. Prominent lymph nodes (up to 9 mm) were noted along the lesser curvature of the stomach.

Serum CA-125 levels were elevated at 92 U/mL (normal range: 0–35 U/mL), supporting the likelihood of ovarian pathology. Furthermore, an ascitic tap was performed, and the fluid was

sent for detailed reporting (DR) and culture and sensitivity (CS). The findings from the ascitic fluid DR are summarised in Table I, which indicates elevated lactate dehydrogenase (LDH) levels and protein, consistent with the presence of exudative fluid. No bacterial growth was observed in the CS examination.

The ascitic fluid analysis demonstrated a low serum-ascites albumin gradient (SAAG), raising the differential diagnoses of tuberculosis, malignancy, and pancreatitis. Subsequently, the patient was referred to the surgery and oncology departments.

Table I: Biochemical and cytological analysis of the peritoneal fluid showing exudative characteristics.

Tests	Results	Reference ranges
Colour	Yellow	Colourless
Appearance	Slightly turbid	Clear
Glucose	4 mg/dL	-
LDH	1489 U/L	125-220
Protein	5.50 g/dL	Transudate <3.0; exudate >3.0
TLC	0.1 × 10^3/µL	0 - 5 × 10^3/µL

Figure 1: Contrast-enhanced CT abdomen showing a thick-walled, multiloculated fluid-attenuation lesion (arrow) in the right peritoneal cavity extending along the right lateral margin of the liver.

Figure 2: Small, enhancing nodular lesion along the left anterior abdominal wall, accompanied by mesenteric fat stranding (arrow).

DISCUSSION

PMP is a rare yet clinically significant condition, with an incidence of approximately 1 to 4 cases per million individuals. It predominantly affects females in their 50s, aligning with the present case of a 55-year female patient.[2]

PMP originates from mucin-producing neoplasms that rupture, leading to the dissemination of epithelial and mucin-secreting cells within the peritoneal cavity. This process results in the accumulation of mucinous fluid, commonly referred to as jelly belly.[3] While the appendix is the most frequent site of origin, this case underscores a less common ovarian cause. Ovarian causes can be primary, as in the case of a mature cystic teratoma or mucinous ovarian tumour. Moreover, they can be secondary, as in the case of colon cancer metastasised to the ovary. The other least common sites of origin may include the bowels, pancreas, fallopian tubes, and stomach.[4] Due to its indolent progression, patients often present with nonspecific symptoms, such as vague abdominal discomfort, which is frequently misdiagnosed as irritable bowel syndrome or other gastrointestinal disorders. The diagnostic delay observed in this case highlights the necessity for heightened clinical suspicion, particularly in females with persistent abdominal complaints.

Ultrasound is typically the initial imaging modality due to its accessibility and cost-effectiveness. In this case, ultrasound revealed septated fluid collections, raising suspicion for PMP. However, CECT remains the cornerstone for staging and treatment planning. CT delineated the full extent of disease, aiding in surgical decision-making.[5]

Serum tumour markers play a pivotal role in identifying the primary site of origin. Elevated CA-125, in conjunction with imaging findings, suggested an ovarian origin in this patient. Additional markers such as carcinoembryonic antigen (CEA) and CA 19-9 further contribute to diagnostic accuracy and prognostication.

PMP can be complicated by bacterial superinfection, potentially leading to peritonitis or sepsis. Another critical consideration is systemic metastasis, which is influenced by tumour aggressiveness and the completeness of cytoreduction.[6]

Prognosis largely depends on tumour grading. Patients with low-grade PMP have a 10-year survival rate of approximately 63%, whereas those with high-grade disease exhibit a significantly lower survival rate of 40.1%.[6]

Management strategies for PMP are dictated by tumour grade and disease burden. Low-grade PMP is primarily treated with cytoreductive surgery, whereas high-grade disease often necessitates adjuvant chemotherapy to improve outcomes.[7] Early diagnosis and timely intervention are crucial in optimising patient survival and quality of life.

The other differential diagnoses that should be considered include soft tissue tumours with myxoid changes, endometriotic

deposits in the abdominal cavity, or ruptured viscus. Careful clinical and histopathological correlation is needed to rule out other potential causes.[7]

This case highlights the importance of considering PMP in the differential diagnosis of persistent abdominal complaints, particularly in middle-aged females. Advanced imaging modalities, particularly CT and tumour markers, play a crucial role in early detection and accurate staging, ultimately guiding appropriate therapeutic strategies.

This case emphasises the need to establish screening guidelines for evaluating persistent nonspecific symptoms in postmenopausal women to enable earlier diagnosis and prevent disease progression. Furthermore, future research should focus on survival outcomes and recurrence rates, particularly in patients with advanced-stage PMP originating from the ovaries, to optimise management strategies and improve prognoses.

PATIENT'S CONSENT:
Informed consent was obtained from the patient.

COMPETING INTEREST:
The authors declared no conflict of interest.

AUTHORS' CONTRIBUTION:
TS: Conception of the study design, data collection, interpretation, and writing of the manuscript.
SR: Manuscript revision, supervision, refining of figures, and data presentation.
Both authors approved the final version of the manuscript to be published.

REFERENCES

1. Tsoukalas N, Tsapakidis K, Tolia M, Kiakou M, Galanopoulos M, Aravantinou-Fatorou E, *et al*: A challenging clinical diagnosis. Case report and review of the literature. *Cancer Diag Progn* 2024; **4(2)**:198-203. doi: 10.21873/cdp.10308.
2. Yu B, Raj MS. Pseudomyxoma peritonei. Treasure Island (FL): StatPearls Publishing; 2024 Jan– [cited 2025 Mar 13]. Available from: https://www.ncbi.nlm.nih.gov/books/NBK541116/.
3. Liu S, Liu X, Ma R, Yu S, Lu L, Lin Y, *et al*. Global trends in research of pseudomyxoma peritonei: A bibliometric and visualization analysis. *Front Oncol* 2024; **14**:1323796. doi: 10.3389/fonc.2024.1323796.
4. Ionescu S, Marincas M, Madge OL, Dicu-Andreescu IG, Chitoran E, Rotaru V, *et al*. Ovarian causes of pseudomyxoma peritonei (PMP)-A literature review. *Cancers (Basel)* 2024; **16(8)**:1446. doi: 10.3390/cancers16081446.
5. Sun P, Li X, Wang L, Wang R, Du X. Enhanced computed tomography imaging features predict tumour grade in pseudomyxoma peritonei. *Quant Imaging Med Surg* 2022; **12(4)**:2321-31. doi: 10.21037/qims-21-976.
6. Baratti D, Milito P, Kusamura S, Martin Roman L, Guaglio M, Deraco M. Systemic metastases from low-grade and high-grade pseudomyxoma peritonei: Treatments and outcomes. *Eur J Surg Oncol* 2022; **48(7)**:1590-7. doi: 10.1016/j.ejso.2022.01.010.
7. Yu B, Raj MS. Pseudomyxoma Peritonei. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; updated 2024 Mar 27 [cited YYYY MMM DD]. Available from: https://www.ncbi.nlm.nih.gov/books/NBK541116/.