

Primary Extramedullary Plasmacytoma of the Ileum: A Rare Diagnostic Challenge with Clinicopathological Correlation and Review of the Literature

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Case Report

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Abstract

Background

Primary extramedullary plasmacytoma is a rare plasma cell neoplasm arising outside the bone marrow cavity. Primary involvement of the gastrointestinal tract is rare specially isolated small bowel in a middle age patient. Diagnosis is challenging as presentation of disease is variable with non-specific symptoms such as abdominal pain, or gastrointestinal bleeding, and imaging cannot differentiate between these tumor from other non-hematological neoplasms. Diagnosis requires histopathological examination of the tumor with immunohistochemistry, and other workup to rule out systemic disease and bone marrow involvement. Treatment depends on the primary site of disease involvement and the presence of other features of systemic disease.

Case presentation

We present a rare case of a primary extramedullary plasmacytoma of small intestine in a 40-year-old patient presenting with abdominal pain, and melena and was found to have a 3.5x3 cm ileal ulceroinfiltrative avidly enhancing mass with mesenteric lymphadenopathy, raising a suspicion of ileal neuroendocrine tumor. He underwent segmental ileal resection and was diagnosed as plasmacytoma after histopathological examination along with assimilation of immunohistochemistry.

Conclusion

Primary extramedullary plasmacytoma of the ileum is a rare entity and should be included in the differential diagnosis of an ileal mass. A definitive diagnosis requires thorough histopathological assessment with immunohistochemistry and a complete systemic work-up to rule out underlying plasma cell myeloma.

Background

Extramedullary plasmacytoma (EMP) belongs to a group of hematological neoplasm called plasma cell neoplasm (PCN) which is a clonal disorder histopathologically characterized by localised proliferation of plasma cells of diverse maturity and their monoclonal immunoglobulin products. EMP is a rare entity that involves organs outside the bone marrow, representing 3–5% of all PCN (Holler A, et al. 2022). EMP may be primary in its nature, that is, when it occurs alone in the absence of plasma cell myeloma (PCM); or it can be secondary to a PCM. EMP is more frequent in men (66%) and has a median age at diagnosis of 55 years. Most cases of EMP occur in the upper respiratory tract (oropharynx, nasopharynx, sinuses and larynx) due to abundance of lymphoid tissue in these regions. The remaining cases involve diverse anatomic sites including urinary bladder, central nervous system, breast, thyroid, testis, parotid gland, and skin. Gastrointestinal (GI) tract involvement is rare and represents only a small subset of all reported

cases, especially in the middle age group (Luh et al. 2007). In the GI tract, stomach, liver and colon are the most frequent sites of EMP, whereas the small intestine (duodenum, jejunum and ileum) is a rare location, accounting for 4–5% of all gastrointestinal EMPs. In 30–40% of the cases, local lymph nodes are involved at the time of presentation (Alnimer et al. 2021). This case adds to the current literature of rare cases of primary extramedullary plasmacytoma of the ileum in a middle age patient, with a brief review of literature.

Case presentation

A 40-year-old serviceman with no significant past medical or family history was presented with chief complains of intermittent abdominal pain and melena of four months duration presented to the Gastrosurgery outpatient department. The pain was dull aching, moderate in intensity, initially started in the right iliac fossa, and progressively became diffuse. The episodes lasted for 6–8 hours and were only partially relieved by analgesics. There was no history of abdominal distension, anorexia, weight loss, previous surgery or drug allergy.

On physical examination patient was conscious, alert and hemodynamically stable. Abdominal examination revealed soft, non-distended abdomen with a vaguely palpable mass of 4.0x4.0 cm with mild right iliac fossa tenderness. No pallor or hepatosplenomegaly was evident.

A small bowel push enteroscopy revealed a large ulceroinfiltrative mass in the ileum, 80 cm proximal to ileocecal junction. A contrast enhanced computed tomography (CECT) of the abdomen revealed an ill-defined heterogeneously enhancing infiltrative mass measuring 3.5x3.0x2.5 cm arising from the medial wall of the proximal ileal loops with multiple enlarged mesenteric lymph nodes, largest measured 2.0x1.5 cm. Total body positron emission tomography-computed tomography (PET-CT) performed, which showed an avidly enhancing ileal wall lesion measuring 3.0x2.5 cm, with adjacent circumferential bowel wall thickening with enlarged mesenteric lymph nodes. Appendix was largely unremarkable. In view of hypervascular nature of the lesion and associated with mesenteric lymphadenopathy, a provisional diagnosis of neuroendocrine tumor was considered. However, serum chromogranin level was within normal limits (51.8. ng/ml). Initial laboratory tests showed hemoglobin of 13.1 gm/dL, a WBC count of $7.5 \times 10^3/\text{ul}$, and platelets of $210 \times 10^3/\text{ul}$ [Table-1].

Table 1
Laboratory investigations of case

Investigation	Patient value	Reference range
Routine hematological investigation		
Hemoglobin (gm/dl)	13.1	13-16.5
Total leucocyte count (/uL)	7.5×10^3	$4.0-11.0 \times 10^3$
Platelet count (/uL)	210×10^3	$150-450 \times 10^3$
Plasma cell dyscrasia work-up		
Serum protein electrophoresis	Normal pattern, no monoclonal band detected in gamma region	No monoclonal band
Serum immunofixation	No monoclonal protein detected	Absent
Serum kappa and lambda light chain ratio	1.35	0.26–1.23
Tumor marker evaluation		
Serum chromogranin A (ng/ml)	51.8	< 100

The patient was planned for surgical exploration, en-block resection of involved ileal segment with margins and mesenteric lymph nodes excision. Restoration of bowel continuity was maintained by side-to-side ileo-ileal anastomosis using a stapled and hand sewn two layer technique. Post-operative period was uneventful.

On gross examination, a firm intramural ileal mass measuring 3.5x3.0 cm was identified. On serial section of mesenteric fat multiple lymph nodes were identified, largest measured 2.5 cm in maximum dimension [Figure 1A]. On histopathological examination of hematoxylin and eosin (H&E) stain slide showed ulcerated mucosal epithelium and displayed atypical plasma infiltrating into the lamina and muscularis propria [Figure 1, B-D].

To exclude the PCM, marrow examination and other work-up for myeloma was performed. Bone marrow examination displayed normal trilineage hematopoiesis with less than < 1% of plasma cells. Other work-up for myeloma including serum immunofixation, serum protein electrophoresis (SPEP) and free light chain assay were also performed which showed negative results. Fluorodeoxyglucose positron emission tomography/CT (FDG-PET/CT) scan revealed no increased metabolic activity elsewhere in the body, hence a diagnosis of EMP was rendered. After the surgical management, the patient is under follow-up from 6 months and no recurrence has been seen.

Discussion

According to the International Myeloma Working Group (IMWG), extramedullary solitary plasmacytoma is defined as a biopsy-proven solitary lesion of soft tissue or bone with evidence of clonal plasma cells. The work-up for diagnosis involves bone marrow with no evidence of clonal plasma cells, absence of CRAB (hypercalcemia, renal insufficiency, anemia, and lytic bone lesions) criteria, and normal skeletal survey on magnetic resonance imaging. EMP can occur as a primary disease or secondary to multiple myeloma. In addition, patients with the primary disease can progress to develop multiple myeloma time (Hatipoğlu et al. 2025). The reason why some patients progress while others do not still remain enigmatic. One theory attribute this phenomenon to differences in chemokine receptors and cellular adhesion molecules expressed on atypical plasma cells (Hughes et al. 2007).

Small bowel primary is an exceptionally rare site for EMP, with only a few cases have been described in the literature (Park et al. 2022, Lopes da Silva. 2012). Among small intestine, the ileum is the most common site, as in the present case. Patients usually present with non-specific symptoms including abdominal pain, which is by far the most common symptom reported, along with signs of intestinal obstruction, or melena, that can mimic non-haematological malignancies, as in the present case (Hatipoğlu et al. 2025, Hughes et al. 2007, Lopes da Silva, 2012)

Only 3%–5% of gastrointestinal malignancies originate from the small intestine, of these most common are epithelial malignancies, followed by carcinoid tumors, gastrointestinal stromal tumors (GIST) and lymphomas. Radiographical findings of intestinal plasmacytoma are non-specific and isolated imaging assessment of these tumors cannot distinguish these from other neoplasms (Anzidei et al. 2011, Glasbey et al. 2018). The initial provisional diagnosis of neuroendocrine tumor was considered in present case on radiology because of heterogeneously avidly enhancing hypervascular infiltrative mass with significant lymphadenopathy.

The primary workup of such cases includes routine laboratory investigations such as complete blood cell count (CBC) and a routine biochemistry investigation and chromogranin A level. In addition to a biopsy-proven extramedullary tumor showing clonal plasma cells, and absence of neuroendocrine markers, a bone marrow biopsy free of clonal plasma cells and advanced MRI imaging showing no lytic lesions are mandatory to make a definitive diagnosis of primary EMP (Pires et al. 2025).

Histopathological examination is mandatory for the diagnosis of EMP, microscopic findings include a diffuse infiltration of plasma cells having eccentric nuclei, coarse cart wheel chromatin, inconspicuous nucleoli and moderate amount of cytoplasm. In the present case, the tumor was composed of diffuse sheets of atypical plasma cells involving mucosa, submucosa and muscularis propria, with associated lymphoid aggregates. The histomorphology features were suggestive of plasma cell neoplasm, however, immunophenotyping confirmation was essential due to the consideration of other lymphoid neoplasm or poorly differentiated malignancies as a possibility (Gupta et al. 2007, Patel et al. 2025).

Role of immunohistochemistry is essential in the definitive diagnosis of EMP and excluding other possible mimickers. Plasma cells are typically positive for CD138, CD38, MUM-1/IRF4 and essentially show a light chain restriction, as in present case (Gupta et al. 2007, Patel et al. 2025, Alfar et al. 2022).

Exclusion of systemic plasma cell myeloma, is a crucial diagnostic consideration in all cases of EMP, as secondary involvement by plasma cell myeloma must be differentiated from primary EMP, because of the clinical course, approach of treatment, and significant prognostic difference. In the present case, serum protein electrophoresis, and immunofixation did not show a monoclonal protein, and serum free light chain did not reveal any abnormality. Bone marrow examination and absence of systemic features further supported the diagnosis of primary EMP (Gupta et al. 2007).

The behaviour of gastrointestinal EMP is variable, they may show locally aggressive behaviour with infiltration in to other adjacent structures, or regional lymph node metastasis, however in the present case no such findings were shown. The presence of peritumoral lymphadenopathy in EMP mandates meticulous examination of resected lymph nodes. In the present case, lymph node involvement was not present (Lopes da Silva R.2012, Gupta et al. 2007, Patel et al. 2025).

Approximately 30% of patients of primary EMP may progress to PCN. Progression to PCN is extremely rare in small intestine EMP, with only three cases reported in a review by Lopes da Silva (Gupta et al. 2007, Patel et al. 2025, **Lopes da Silva. 2012**).

There are no clear guidelines on the management of gastrointestinal EMP in the literature due to rarity of cases. Treatment strategies are usually tailored according to case and depend on tumor location, size, extent of disease and resectability. Multidisciplinary team consisting of hematopathologist, clinical haematologist, gastrosurgery, and radiotherapy is beneficial for the better management of the disease. Surgery is useful in gastrointestinal EMP presenting with complications of obstruction, bleeding history and specially among the cases with diagnostic uncertainty. In this case, segmental ileal resection with en-block removal of the suspicious involved mesentery was performed. Surgery alone can be curative with a 5-year-overall survival probability of 84% in cases with solitary EMP (Alfar et al. 2022, Ding et al. 2019).

Radiotherapy is effective because of its radiosensitive nature particularly for disease located in anatomically challenging locations, where surgery cannot be performed or may lead to morbidity. For small bowel EMP, complete surgical resection of the mass is required, however supplementation with local radiotherapy, 40–50 Gy over a four-week period is considered in cases with adjacent organ involvement or disseminated disease to the mesenteric lymph nodes, as it carries more chances of recurrence (Ding et al. 2019). Systemic chemotherapy is similar to that used in multiple myeloma and is indicated when there is disseminated disease, recurrence or progression to plasma cell myeloma, while in solitary cases of primary EMP, it is avoided (Ding et al. 2019, Zhang et al. 2017).

The prognosis of primary EMP is better as compared to secondary involvement by plasma cell myeloma. However, gastrointestinal EMP may have higher recurrence due to delayed diagnosis because of non-specific symptoms and deeper infiltration along with nodal and adjacent organ involvement. Therefore, long-term follow-up is recommended in such cases with 6-monthly clinical examination, serum monoclonal protein estimation, and imaging when indicated ((Ding et al. 2019, Zhang et al. 2017, **Lopes da Silva. 2012**).

Ileal primary EMP is extremely rare, the present case adds to literature by describing clinical and radiological features mimicking an epithelial neoplasm with involvement of mesenteric lymph nodes with review of recent diagnostic and treatment protocols.

Conclusions

To conclude, small bowel plasmacytoma in middle-aged patients is an extremely rare entity that can present with non-specific symptoms of intestinal obstruction. Although uncommon, gastroenterologists should keep a differential diagnosis of intra-abdominal EMP in the setting of nonspecific gastrointestinal symptoms even in a middle age patient, especially when common diagnoses are not supported by laboratory investigations. For a definitive diagnosis histopathological examination along with use of immunohistochemistry is mandatory and bone marrow examination with ancillary studies is required to exclude multiple myeloma.

Declarations

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Author contributions

AS and AS formulated the idea and prepared the manuscript. AR and PC helped in collection of data for case. RR, SK and PP revised and finalised the manuscript.

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Data availability

No datasets were generated or analysed during the current study.

Declaration of generative AI and AI-assisted technologies in the writing process

During the preparation of this work, the author(s) used ChatGPT in order to streamline some sentences. After using this tool, the author(s) reviewed and edited the content as needed and take(s) full responsibility for the content of the publication.

Consent to Publish

Informed consent was obtained from individual participants included in the study for the publication of their identifiable details, images, or videos.

Competing interests

The authors declare no competing interests.

Ethics declaration

Not applicable.

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Figures

Figure 1. Gross and histopathological findings of the lesion (A) Gross image of the resected ileal segment showing an ulceroinfiltrative lesion (➡) (B) Low-power of hematoxylin-eosin (H&E,x10) stained section showing panmural infiltration of the ileal wall by plasma cells (H&E, x10) (C, D) Demonstrating sheets of plasma cells having eccentric nuclei, coarse chromatin, and moderate amount of eosinophilic cytoplasm (H&E, x40).

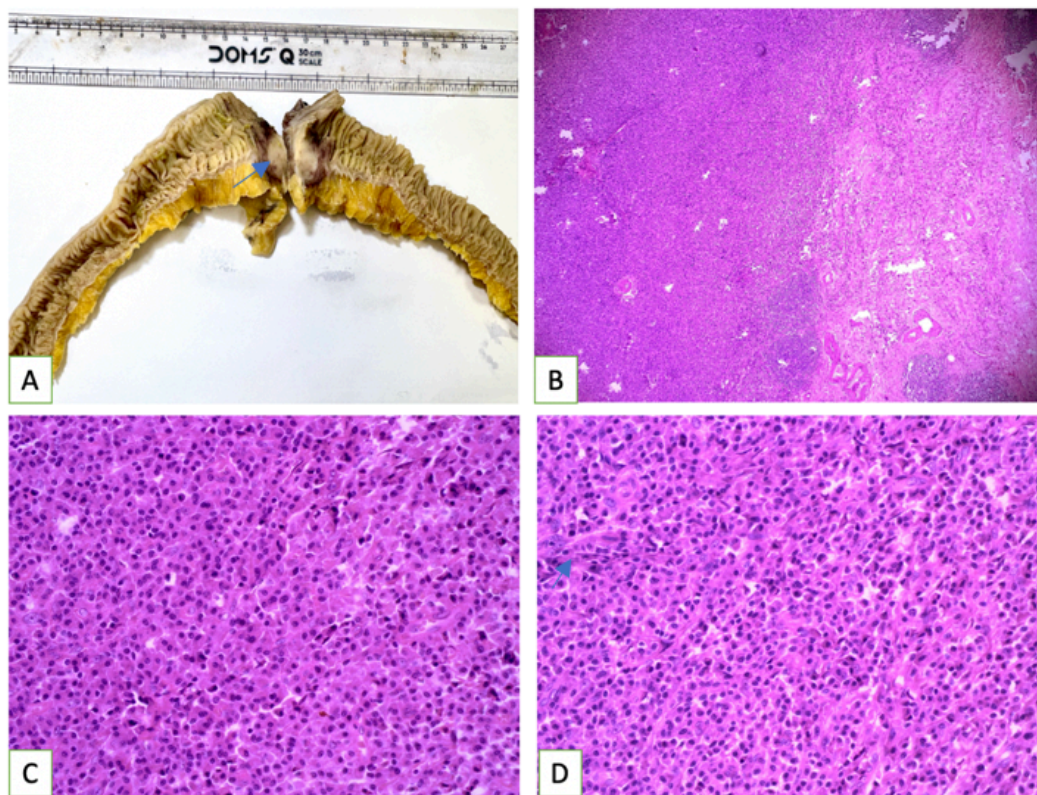


Figure 1

See image above for figure legend.

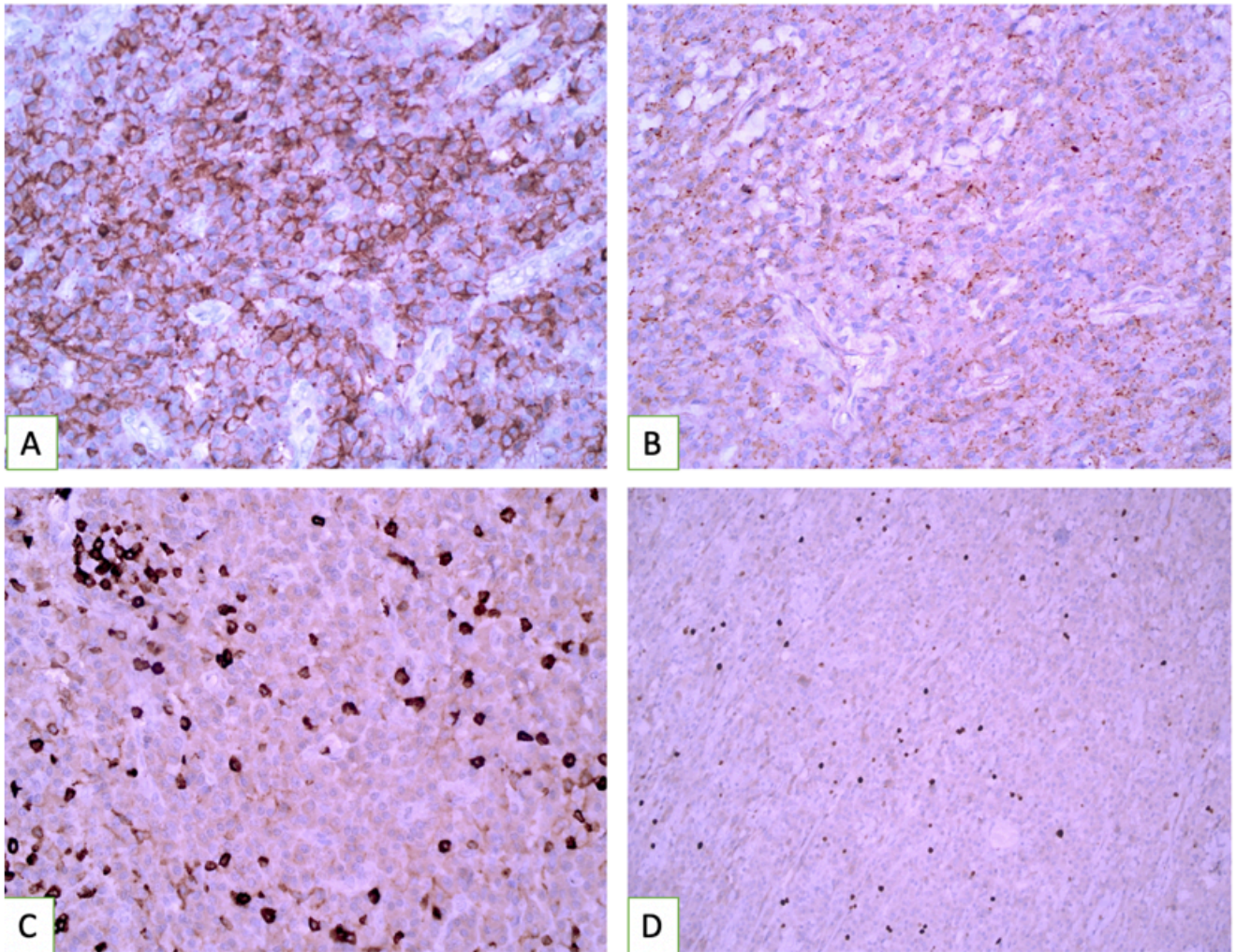


Figure 2

(A) CD38 showing membranous positivity in tumour cells (B) CD138 showing membranous positivity in tumour cells. (C) MUM1 showing focal positivity in tumour cells. (D) Ki-67 proliferation index was 2%-3%

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