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Surgical Cytoreduction and Intraperitoneal Hyperthermic Chemotherapy for Delayed Pseudomyxoma Peritonei of Appendiceal Origin: A Case Study

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Abstract:

- ***Background:***

Pseudomyxoma peritonei (PMP) is a rare peritoneal malignancy that is characterized by mucinous ascites and peritoneal surface implants, which usually originate from low grade appendiceal mucinous neoplasms (LAMN). Due to its indolent yet progressive nature, diagnosis is often delayed. Cytoreductive surgery (CRS) combined with hyperthermic intraperitoneal chemotherapy (HIPEC) remains the mainstay of management.

- ***Case Presentation:***

We report a case of a patient previously treated with laparoscopic cholecystectomy and appendectomy for LAMN (T4N0M1) in 2022, who presented two years later with abdominal pain and abdominal wall abnormalities. Imaging revealed diffuse multicystic intraperitoneal masses, adhesions, and scalloping of visceral surfaces suggestive of PMP. The patient underwent extensive cytoreductive surgery, including exploratory laparotomy, partial colectomy with stapled anastomosis, partial gastrectomy, splenectomy, and peritoneal resections, followed by HIPEC. Postoperative recovery was uneventful, with gradual reintroduction of oral feeding and multidisciplinary follow up.

- ***Conclusion:***

This case sheds light on the importance of early detection. Accurate imaging and comprehensive surgical management in PMP. CRS combined with HIPEC gives the best shot in long term control, mainly in cases that are secondary to LAMN. Long term follow up remains crucial as there is a risk of delayed progression.

Keywords: *Pseudomyxoma Peritonei; Low-Grade Appendiceal Mucinous Neoplasm; Cytoreductive Surgery; HIPEC; Peritoneal Surface Malignancy; Case Report.*

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I. INTRODUCTION

Pseudomyxoma Peritonei (PMP) is a rare type of cancer of unknown origin, affecting 1-4 cases per million annually. It's characterized by diffuse intra-abdominal gelatinous ascites and mucinous implants on peritoneal surfaces. Whilst mucinous appendiceal adenocarcinoma is its primary cause, it can also result from other mucus-producing tumors, such as ovarian, pancreatic, or gastrointestinal. Although PMP can be difficult to diagnose, the standard treatment involves complete cytoreductive surgery (CRS) and hyperthermic intraperitoneal chemotherapy (HIPEC).

II. CASE DISCUSSION

The case describes a patient with a low-grade appendiceal mucinous neoplasm (LAMN, T4N0M1) initially managed with laparoscopic cholecystectomy and appendectomy in 2022.

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Two years later, the patient presented with abdominal pain, further inspection revealed palpable abnormalities within the abdominal wall.

Radiological evaluation confirmed extensive intra-abdominal adhesions, diffuse multicystic peritoneal masses, and scalloping of the liver and other visceral surfaces, findings highly suggestive of pseudomyxoma peritonei.

An exploratory laparotomy was performed, which confirmed widespread mucinous peritoneal disease. The patient underwent:

- Partial colon resection with stapled anastomosis
- Partial gastrectomy
- Splenectomy
- Extensive peritoneal stripping and tumor debulking

Following maximal cytoreduction, HIPEC was administered to get rid of any residual microscopic disease.

The patient was hemodynamically stabilized postoperatively and gradually transitioned from parenteral to oral nutrition. Recovery was achieved under coordinated multidisciplinary management, and the patient was discharged in stable condition with plans for long term follow up.

III. DISCUSSION

Pseudomyxoma peritonei remains difficult to treat due to its rarity, complex pathophysiology, and diagnostic difficulties. CRS combined with HIPEC provides the best chance for long-term survival and disease control. The case highlights the importance of a comprehensive approach in managing PMP, especially when arising from LAMN, which most commonly progresses to widespread peritoneal metastasis. Imaging accuracy plays a vital role in diagnosing PMP, with features like scalloping of visceral surfaces and multicystic peritoneal masses being characteristic. Early diagnosis and accurate staging allow for effective surgical planning. In this patient, the presentation of PMP two years post-initial surgery underscores the rise of delayed manifestations, leading to long-term care. CRS and HIPEC aim to achieve complete cytoreduction and eradicate residual microscopic disease, as demonstrated by this case involving extensive visceral resections.

IV. CONCLUSION

Cytoreductive surgery combined with HIPEC remains the gold standard in the management of pseudomyxoma peritonei, especially in cases arising from LAMN. This case underscores:

- The importance of early recognition and appropriate imaging
- The need for meticulous surgical technique
- The significance of multidisciplinary perioperative care
- The necessity of structured long-term follow-up

The successful management of this case highlights the need for increased awareness of PMP among physicians, timely intervention, and more research to refine treatment protocols for this rare and challenging condition.

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