Gastrointestinal Stromal Tumor of the Appendix

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Gastrointestinal stromal tumors (GIST) are the most common mesenchymal tumors of the gastrointestinal tract [1]. GIST most commonly occur in the stomach (60%) and small intestine (30%), whereas primary appendicular GIST are extremely rare [2].

Our case report describes a patient who presented with suspected acute appendicitis, which was found to be GIST of the appendix in pathological examination after resection.

PATIENT DESCRIPTION

A 75-year-old male patient presented with right lower quadrant (RLQ) abdominal pain lasting for a day. He denied fever or addition gastrointestinal complains. His past medical history was significant for diabetes mellitus, hypertension, and dyslipidemia. He also had a past episode of appendicitis 2 years earlier, which was managed non-operatively with antibiotics. His surgical history included bariatric surgery several years before that.

Physical examination was significant for RLQ tenderness without signs of peritoneal irritation. Laboratory work was significant for C-reactive protein of 160 U/ml. An abdomen computed tomography (CT) scan demonstrated inflamed appendix, width 16 mm. Mesentery of the cecum and ascending colon were involved in the inflammatory process. The patient underwent an uneventful laparoscopic appendectomy. No additional findings were noted during the surgery. After the surgery, the patient was admitted to the ward and discharged the following day.

The description of the specimen included spindle cell type (staining were made for CD117, DOG1, Desmin, and S100). A low grade of mitosis was observed and diagnosis of GIST was established. The tumor size was less than 1 cm and it was located 1 cm proximally to the tip of the appendix.

The case was discussed in multidisciplinary meeting with oncologists. The patient underwent a positron-emission tomography/computed tomography scan that demonstrated no pathological findings. The patient was referred to oncological follow-up without any additional treatment.

COMMENT

Few types of tumors are described by an incidental diagnosis through pathology results after appendectomy for acute appendicitis. Among these types are neuroendocrine tumors (NET), adenocarcinoma, GIST, and mucinous appendiceal tumors. Tumor types differ in malignant potential, staging systems, prognosis, and surgical and medical treatment. NET is the most common tumor of appendix with generally excellent prognosis. Appendiceal adenocarcinoma surgical treatment includes mandatory right hemicolectomy. For pseudomyxoma peritonei, a subtype of appendiceal mucinous tumor, surgical treatment may include hyperthermic intraperitoneal chemotherapy.

GIST are the most common mesenchymal tumors originating from the digestive tract. GIST have a characteristic morphology, they are generally positive for CD117 (C-kit), and primary are caused by activating mutations in the KIT or platelet derived growth factor receptor alpha. Typically, GIST present in the submucosal of the gastrointestinal tract, whereas stomach (50%) and small bowel (25%) are the most frequent sites. The clinical presentation of GIST may include gastrointestinal hemorrhage, intra-abdominal bleeding, perforation or bowel obstruction. The prognosis of GIST depends on several factors, the most important are the size of the tumor and the mitotic rate. Generally, GIST with diameter larger than 2 cm should be resected. GIST defined as high-risk (based on size and number of mitosis in high power field) may require adjuvant treatment with imatinib (tyrosine-kinase inhibitor) [3].

GIST of the appendix is extremely rare and we found only 16 cases that were reported in the literature [1]. In most cases it is an incidental finding in a specimen following appendectomy for acute appendicitis. In one reported case it was presented as a mass of the RLQ. Another exceptional case described a giant GIST of appendix with metastasis to peritoneum that was treated with neoadjuvant imatinib before appendectomy [1].

Pathological analysis of specimen usually reveals low grade GIST. It should be noted that although mean age for diagnosis of acute appendicitis is about 21 years [4], patients with appendiceal GIST had a mean age of 67 years [5].

Recommended follow-up according to National Comprehensive Cancer Network (NCCN) guidelines is to perform abdominal CT every 3 to 6 months for 3 to 5 years, and then annually. Less frequent surveillance may be acceptable for low grade or very small tumors (< 2 cm) [3]. Previously reported cases and the present case were adequately treated with a simple appendectomy and most of the cases were low risk for malignancy [2].

CONCLUSIONS

GIST of the appendix is a rare diagnosis. Most are diagnosed postoperatively in pathological examination. Appendiceal GIST are usually benign and require follow-up but no further treatment.

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Monsters are real, and ghosts are real too. They live inside us, and sometimes, they win.
Stephen King (born 1947), American author of horror, supernatural fiction, suspense, crime, science-fiction, and fantasy novels

Capsule

NLRP1 knockout to the rescue

The NLRP1 inflammasome is a protein complex crucial for various immune responses, and its dysregulation can lead to severe immune disorders. **Harapas** et al. studied four children with dipeptidyl peptidase 9 (DPP9) loss-of-function mutations and found that these patients had various immune disorders and spontaneous activation of the NLRP1 inflammasome in their isolated keratinocytes. Using a mouse model with a catalytically inactive DPP9 mutation, the authors found that neonate lethality could be rescued by also knocking out NLRP1. In a zebrafish model, knockout of a molecule involved in NLRP1 inflammasome formation also rescued the survival of zebrafish with a DPP9 deletion. Thus, DPP9 mutations seem to result in immune disorders caused by NLRP1 inflammasome overactivation.

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Capsule

Transplantation of human neural progenitor cells secreting GDNF into the spinal cord of patients with ALS: a phase 1/2a trial

Amyotrophic lateral sclerosis (ALS) involves progressive motor neuron loss, leading to paralysis and death typically within 3–5 years of diagnosis. Dysfunctional astrocytes may contribute to disease and glial cell line-derived neurotrophic factor (GDNF) can be protective. **Baloh** and colleagues showed that human neural progenitor cells transduced with GDNF (CNS10-NPC-GDNF) differentiated to astrocytes protected spinal motor neurons and were safe in animal models. CNS10-NPC-GDNF were transplanted unilaterally into the lumbar spinal cord of 18 ALS participants in a phase 1/2a study (NCT02943850). The primary endpoint of safety at 1 year was met, with no negative effect of the transplant on motor function in the treated leg compared with the untreated leg. Tissue analysis of 13 participants who died of disease progression showed graft survival and GDNF production. Benign neuromas near delivery sites were common incidental findings at post-mortem. This study shows that one administration of engineered neural progenitors can provide new support cells and GDNF delivery to the ALS patient spinal cord for up to 42 months post-transplantation.

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Eitan Israeli