

Neuromuscular and vascular hamartoma of the duodenum.

A clinical case and review of the literature



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Neuromuscular and vascular hamartoma (NMVH) of the duodenum. A clinical case e review of the literature

BACKGROUND AND AIMS: *The NMVH of the intestine is a rare lesion, typical located in the small bowel. After the first 2 cases, reported in 1982, other 12 cases have been described, ten localized in the jejunal or ileal tract, only 1 in the cecum.*

SUBJECTS AND METHODS: *A case of NMVH of the duodenum, simulating a Crohn's disease, is described. The lesion extended about 12 cm. and it caused intestinal stenosis. The microscopic analysis on the operative specimen highlighted the presence of a neuronal hyperplasia at mucous membranae and submucosal levels, associated to muscularis mucosae hypertrophy and disorganisation. Expanded and ectasic veins, proliferation of nervous fibres and ganglion cells in the submucosal were also observed.*

RESULTS: *NMVH is a non-epithelial hamartomatous, submucosally based proliferation of mature submucosal elements capable of causing small bowel obstruction. In the controversy about the nature of the NMVH, we consider it a separate entity, where the final diagnosis depend on the clinicopathologic setting, as well as on the location and number of the lesions.*

CONCLUSIONS: *The Authors analyse the main characteristics of this rare pathology with regard to clinical, diagnostic and therapeutic aspects.*

KEY WORDS: Duodenum, Neuromuscular and vascular hamartoma, Small bowel.

Introduction

The Neuromuscular and Vascular Hamartoma (NMVH) is a rare, benign pathology of the small bowel that causes stenosis. After the first 2 cases, reported by Fernando and McGovern¹ in 1982, other 12 cases have been described, then localized in the jejunal or ileal tract, only 1 in the cecum²⁻⁹. The diagnosis is only based on the histological features, than it can be very difficult to differentiate a NMVH from other inflammatory or neoplastic small bowel stenosis. The preoperative diagnostic doubts influence the surgical treatment. This study relates a case of a NMVH, localized in the duodenum. This observation has induced us to a review of the literature

and to a clinical and histological analysis of this rare intestinal lesion.

Methods

Woman, 60 years old, with positive familial gastric cancer anamnesis. The patient reported abdominal pain in the previous two-months, than emesis, 8 kg. lose weight, asthenia. An abdominal ultrasonography pointed out an intestinal loop, near to the pancreatic body, with thickened walls. The upper endoscopy did not find lesions as far as the third duodenal tract. A contrastographic study of the upper intestinal tract showed a tight stenosis in the fourth duodenal area. A spiral TC of the abdomen showed a duodenal ectasia proximal to the duodenal-jejunal flexure, where a long stenotic tract, with thickened walls and filiform lumen, was present (Fig. 1). The TC also showed a thickened mesentery, with multiple enlarged lymphonodes. The tumoral markers were normal, a moderate anemia was found (10 g/dl Hb).

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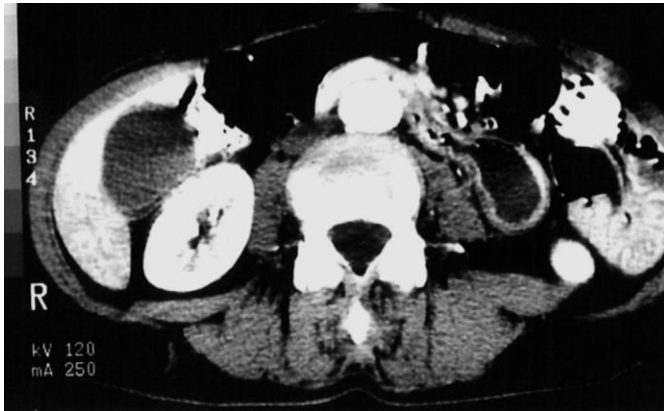


Fig. 1: Abdominal spiral TC: duodenal ectasia proximal to the duodenal-jejunal flexure, with a long stenotic tract and thickened walls and filiform lumen.

The extended stenotic tract and the multiple lymphadenopathies suggested a pre-operative diagnosis of intestinal lymphoma or Crohn's disease. At the laparotomy a 12 cm. stenotic tract, localised in the fourth duodenal tract, was found; the intestinal stricture was associated with very large mesenteric lymphonodes. The intraoperative intestinal biopsy of an intestinal specimen and a mesenteric lymphnode was negative for neoplasia. Then a duodenal-jejunal resection with mesenteric lymphadenectomy was performed (Fig. 2).

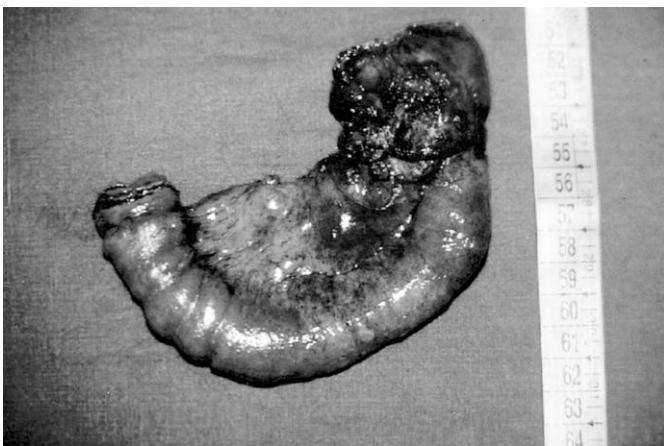


Fig. 2: Surgical specimen: intense duodenal stenosis and thickening of intestinal walls.

The intraoperative study of the intestinal borders of the surgical resection did not point out appearance of the disease. So a duodenal-jejunal anastomosis restored the digestive continuity. The postoperative histological examination of the surgical specimen indicated the presence of *diffuse inflammatory infiltration*, with ulcerate and regenerate features, associated to wall's fistulas. Marked neuronal hyperplasia, associated to *muscularis mucosae hypertrophy realising a disorganisation of muscle*, was

plainly evident; expanded vascular spaces and ectasic veins, proliferation of nervous bundles and ganglion cells in the submucosae were also present. These data suggested a NMVH diagnosis (Figs. 3-4). The patient had a postoperative course without complications and she was discharged 7 days after surgery. After six months she had gained back weight she lost. A small bowel contrastographic study, carried out two years after surgery, did not show any intestinal stenosis. The patient is in good health, 76 months after the operation. The good physical condition and the absence of intestinal recurrences sustain the diagnosis of duodenal NMVH for this case.



Fig. 3: Stenotic tract showed thickening of the wall and "cobblestone" features of the mucosae.



Fig. 4: Diffuse inflammatory infiltration with muscularis mucosae hypertrophy realising a disorganization of muscle.

Discussion

Hamartomas are benign malformations that consist in a disorganised accumulation of differentiated cells, specific of the organ or tissue where the lesion is localised ⁴. They can be found everywhere, i.e. spleen, lung, kidney,

pancreas and intestine (in order of frequency) ^{4,6}. Intestinal hamartomas are usually polyps. They originate from any part of the digestive apparatus, reproducing all of its cellular epithelial (*Brunner's glands hamartoma*) or connective and muscular (*polyposis of Peutz-Jeghers*) ⁸ aspects. Intestinal hamartomas that give rise to vascular, lymphatic or neuronal tissues have been recently described ^{2,3,10}. The NMVH analysed in the presented report is a rare pathology: sporadic cases were found after the first description in 1982. All described NMVH were stenotic lesions, associated to membranous ulcerations and caused intestinal obstruction or hidden gastrointestinal bleeding ^{1,10,11}. Eleven of the reported cases were localised in the small bowel (one case in the jejunum, ten cases in the ileum, one case in the ileal-colic anastomosis), one case was localised in the cecum. No observations relating to the duodenal area were found in the literature, than the present case is particularly uncommon. The lesion consists of a non neoplastic aberrant arrangement of normal tissue: irregular proliferation and association of nervous cells (*neuronal hyperplasia, nervous bundles proliferation*), muscular cells (*alterations of muscularis mucosae and bundles of smooth muscle*), ganglion cells, connective cells and vascular cells were found. This association is specific of the case examined in the present paper. The differential diagnosis refers both to neoplastic intestinal diseases (i.e. lymphoma), or inflammatory stenosis (i.e. *actinic enteritis, post-ischemic enteritis, chronic inflammatory enteritis, enteritis related to anti-inflammatory non-steroid therapy* ^{3,7,12}). Concentric multiple restrictions characterize inflammatory enteritis; the stenosis consists of hyperplasia areas of the muscularis mucosae, linked to incorporations of ganglion cells and intense fibrosis, with smooth muscle fibres similar to hamartomatous lesions. The differential diagnosis with Chron's disease is more difficult: it is based on clinical aspects, on the anatomic localization (Chron's disease typically affects the terminal ileum and the right colon), on the characteristic intestinal course, with multiple lesions and recurrences during the follow-up. The two diseases are often macroscopically overlapping, as the stenotic part, the walls thickening and the mucous membrane ulceration appear in both cases. Histological alterations are varying instead, as granulomas and ulcerations are – in both cases – possible, but not always present. The transmural inflammation with lymphoid aggregation is typical in Chron's disease, but the differential diagnosis is extremely difficult when these features are absent and fistulas, ulcerous or inflammatory granuloma are not present either. In confirmation of this aspect Sheperd ³ opted for a diagnosis of Chron's disease in three of the four cases that he observed. In the presented case, the preoperative and laparotomic aspects suggested a Chron's disease diagnosis, but the neuronal hyperplasia and the proliferation of nervous bundles, ganglion cells, muscular cells and connective and vascular tissues, indicated a NMVH. The histological diagnosis

was confirmed by the clinical course, as no recurrences, nor stenosis in other intestinal areas were found in a 34-month follow-up. In our case no signs of a systemic disease were found, such as neurofibromatosis or Sipple's syndrome, in which nervous tissue alterations are occasionally observed: moreover, the present case can be considered as an independent entity. The treatment of NMVH is surgery, performed in all the reported cases, justified by the difficulties of a pre-operative diagnosis, by the serious clinical conditions and by the negative response to any medical treatment. Surgery consists in a resection of the interested intestinal tract, followed from an anastomosis on macroscopically illness borders. Histological intraoperative essays are necessary to exclude a suspicion for Chron's or lymphoma. These exams must include the borders of the intestinal resection and the mesenteric lymphonodes, in order to extend the excision to the healthy tissues. The main surgical difficulty, in the analysed case, was the anatomic location of the stenotic tract, near to the upper mesenteric vessels, implying an elaborate duodenal-jejunal anastomosis.

Conclusions

The NMVH of the intestine is a rare lesion, typical located in the small bowel. The presented case is the first reported in the duodenum. A preoperative diagnosis is almost impossible, due to the rarity of the disease and to the aspecific clinical and radiological reports. The clinical doubt of Chron's enteritis or intestinal lymphoma is supported by the macroscopic intraoperative appearance. These doubts influence the surgical strategy, pointing to extended resections on macroscopically healthy tissues, with regional lymphadenectomy. The histological intraoperative biopsy can exclude the hypothesis of a tumoral disease, like in the present case. The surgical treatment consists in a resection limited to the stenotic tract. The histology on the surgical piece, completed with immuno-histochemical and ultrastructural studies, allows for the diagnosis, also corroborated by the fast postoperative course and by the absence of recurrences during the follow-up.

Riassunto

L'NMVH dell'intestino è una lesione rara, tipicamente localizzata nel piccolo intestino. Dopo i primi due casi, riportati nel 1982, sono stati descritti altri 11 casi, dieci dei quali localizzati nel digiuno e nell'ileo e solo uno nel cieco.

SOGGETTO E METODO: Viene descritto un caso di NMVH duodenale, simulante un morbo di Chron. La lesione si estendeva per circa 12 cm, causando stenosi intestinale. L'analisi microscopica del pezzo operatorio evidenziava la presenza di iperplasia neuronale che si estendeva sino a

livello sottomucoso, associata ad ipertrofia e disorganizzazione della muscularis mucosae.

È stata inoltre osservata estasia venosa, proliferazione di fibre nervose e presenza di cellule gangliari a livello sottomucoso.

RISULTATI: L'NMVH è un amartoma basato sulla proliferazione sottomucosa di elementi sottomucosi maturi, in grado di causare ostruzione del piccolo intestino. Nella controversia circa la natura dell'NMVH, noi lo consideriamo come entità a sé stante dove la diagnosi finale dipende dall'aspetto clinico, come anche dalla localizzazione e dal numero delle lesioni.

CONCLUSIONI: Gli Autori analizzano le principali caratteristiche di questa rara patologia, sottolineandone gli aspetti clinici, diagnostici e terapeutici.

References

- 1) Fernando SSE, Mc Govern VJ: *Neuromuscular and vascular hamartoma of the small bowel*. Gut, 1982; 23:1008-12.
- 2) Smith CET, Filipe MI, Owen WJ: *Neuromuscular and vascular hamartoma of small bowel presenting as inflammatory bowel disease*. Gut, 1986; 27:964-69.
- 3) Shepherd NA, Jass JR: *Neuromuscular and vascular hamartoma of the small intestine: is it Crohn's disease?* Gut, 1987; 28:1663-68.
- 4) Kwasnik EM, Tahan SR, Lowell IA, et al.: *Neuromuscular and vascular hamartoma of the small bowel*. Dig Dis Sci, 1989; 34:108-10.
- 5) Salas A, Casellas F, Sanz J, et al.: *Neuromesenchymal Hamartoma of the small bowel*. J Clin Gastroenterol, 1990; 12(6):705-9.
- 6) Cortina G, Wren S, Armstrong B, et al.: *Clinical and pathologic overlap in non-steroidal anti-inflammatory drug-related small bowel diaphragm disease and the neuromuscular and vascular hamartoma of the small bowel*. Am J Surg Pathol, 1999; 23:1414-17.
- 7) Zolota V, Melachrinou M, Kakkos S, et al.: *Neuromuscular and vascular hamartoma of the small bowel: case report and review of the literature*. Dig Dis Sci, 2000; 45(10):2051-53.
- 8) Scintu F, Capra F, Giordano, et al.: *L'amartoma neuromuscolare e vascolare dell'intestino tenue. Presentazione di un caso clinico e revisione della letteratura*. Chirurgia Italiana, 2001; 53(3):393-98.
- 9) Shiomi T, Kameyama K, Kawano Y, et al.: *Neuromuscular and vascular hamartoma of the cecum*. Virchows Arch, 2002; 440(3):338-40.
- 10) Olmsted WW, Ross PR, Hjermstad BM, et al.: *Tumors of the small intestine with little or no malignant predisposition: a review of the literature and report of 56 cases*. Gastrointest Radiol, 1982; 12:231-39.
- 11) Rossetti G, Siringo G, Mantovani G, et al.: *Duodenal hamartoma: report of one case*. Radiol Med, 1989; 77:134-6.
- 12) Biarnason I, Price AB, Zanelli G, et al.: *Clinical pathological features of nonsteroidal antiinflammatory drug-induced small intestine strictures*. Gastroenterology, 1988; 94:1070-74.