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Case Report

Sporadic diffuse gastric ganglioneuromatosis causing gastric outlet obstruction in an adult patient: A rare case report and literature review

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ABSTRACT

Objective: Gastrointestinal ganglioneuromatosis is a rare benign neural neoplasm, consists of hyperplasia of nerve fibers, ganglion cells, and schwann cells in the wall of stomach and intestine. The disease may affect any part of the gastrointestinal tract but involvement of stomach is extremely unusual. Mainly are of three types: polypoid ganglioneuromas, ganglioneuromatous polyposis, and diffuse ganglioneuromatosis. To our knowledge, only two cases were reported as diffuse ganglioneuromatosis located in the stomach.
Case Report: 27-years male patient, admitted with complaint of dysphagia for both solid and liquid and recurrent non-bilious vomiting since 1 week underwent Billroth - 1 procedure and antral segment of stomach was sent for histopathological examination. A histopathological diagnosis of Diffuse Gastric Ganglioneuromatosis with muscular mural hypertrophy was made. The presence of ganglion cells and positive staining for S-100 and NSE confirms the diagnosis.
Conclusion: Obstructive gastrointestinal symptoms with a possibility of diffuse ganglioneuromatosis is mainly a disease of young children and infant. But an adult patient, which is an unusual age group, presenting with obstructive gastrointestinal symptoms, the rare possibility of Diffuse ganglioneuromatosis and intestinal neuronal dysplasia should be considered and investigated in order to avoid unnecessary and extensive surgical intervention.

1. Introduction

Ganglioneuroma of gastrointestinal tract is a rare benign neural neoplasm. Most cases occur within the large intestine (including rectum) and occasionally cases arise within the appendix. Ganglioneuroma can be broadly divided into three groups: Solitary ganglioneuroma, Ganglioneuromatous polyposis, and Diffuse ganglioneuromatosis. Most cases are sporadic and indolent; however multiple lesions showing diffuse mural involvement is associated with syndromes.[1] To our knowledge, there are only two case reports of diffuse ganglioneuromatosis located in the stomach. Only six cases of gastric ganglioneuromatous proliferations have previously been reported, two in English and none were diffuse ganglioneuromatosis. The clinical presentation is quite variable including acute intestinal obstruction and intestinal motility disorders, or ganglioneuromatosis may be found incidentally during investigation for other pathology.[2,3]

Here we report a case of diffuse gastric ganglioneuromatosis with clinical presentation of gastric outlet obstruction.

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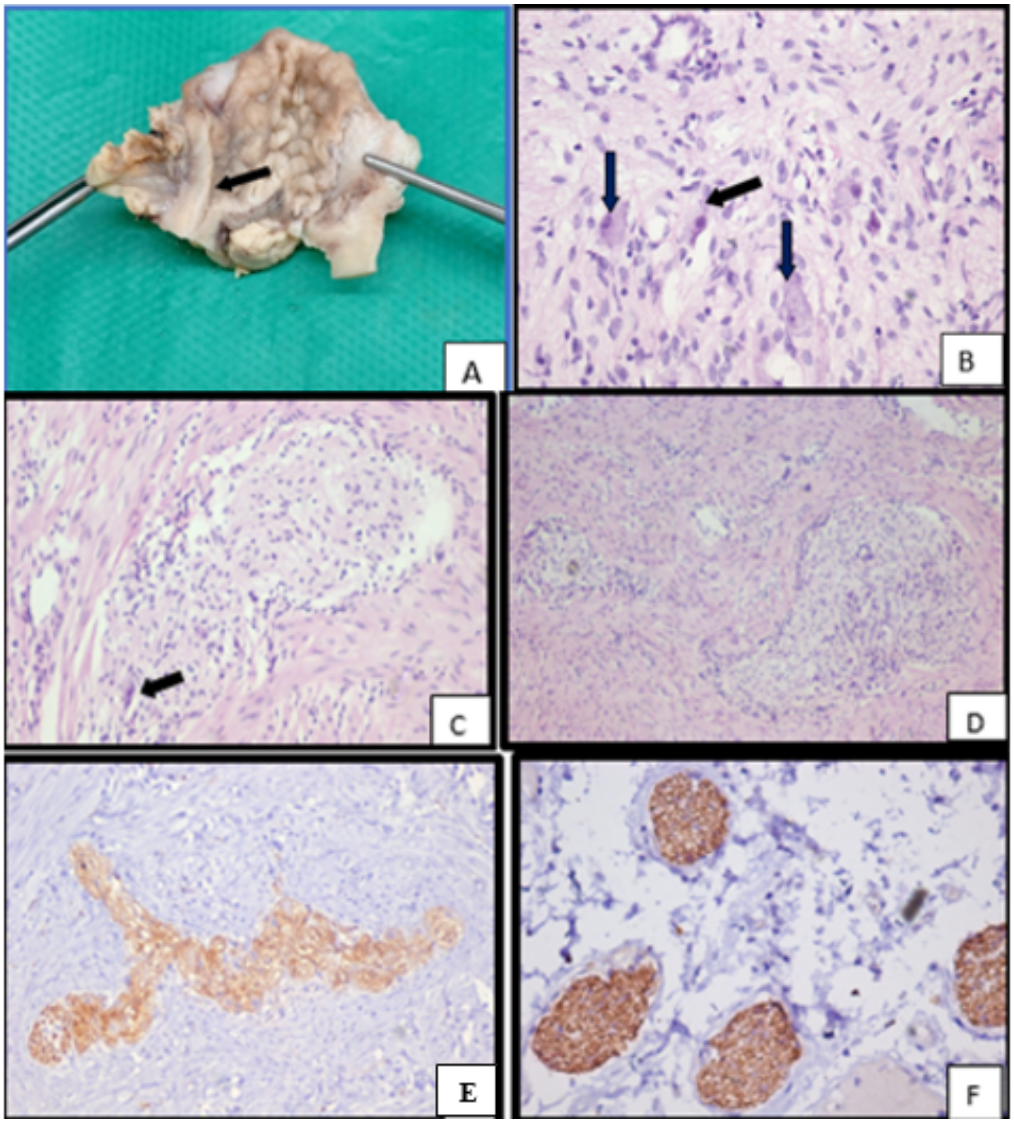

Fig. 1: A: Gross specimen of Diffuse Gastric Ganglioneuromatosis showing stricture at the distal end and markedly thickened wall (marked with arrow); **B:** Myenteric ganglioneuromatous proliferation. Ganglion cells marked with arrows (H & E stain, x40); **C:** Hyperplastic and enlarged nerve fibres and schwann cells in intramural myenteric plexus (H &E stain, x40); **D:** Muscularis propria with a myenteric ganglioneuromatous proliferation. (H & E stain, x40); **E :** Immunohistochemical staining for S100 protein shows diffuse positivity for nerve fibers. (immunohistochemistry stain, x40); **F:** Immunohistochemical staining for NSE shows strong positivity for nerve fiber bundles. (immunohistochemistry stain, x40)

2. Case Report

A 27-years-old male patient was admitted to the emergency room with complaint of dysphagia for both solid and liquid and recurrent non-bilious vomiting since 1 week. He also complained of loss of appetite and significant weight loss. Endoscopic examination revealed an antral stricture and was advised surgical intervention. On examination, he was moderately built and poorly nourished with mild pallor and shrunken eyes. His all-relevant blood investigations, urine analysis and ECG reports were normal. Billroth- 1 procedure was performed and antral segment with stricture was sent for histopathological examination.

2.1. Pathological Findings

Grossly, a stricture was noted at the distal end of the antral segment and wall was markedly thickened. Multiple cut sections from thickened and stricture area showed antral mucosa with marked muscular mural hypertrophy. (Figure 1A) Histopathological examination of sections showed numerous intramural or transmural proliferation of ganglioneuromatous tissue that involved the myenteric plexus.(Figure 1B) The submucosa also

showed thickened and tortuous nerve bundles. There were also seen fibers and bundles with spindle cells and ganglion cells lying in myenteric plexus. (Figure 1C,D) Ganglion cells were increased in number (>7/plexus) in most of the plexus (Figure 1B and showed abundant dense eosinophilic cytoplasm with enlarged nuclei and prominent nucleoli. A histopathological diagnosis of Diffuse Gastric Ganglioneuromatous proliferation/Ganglioneuromatosis with muscular mural hypertrophy was the presence of ganglion cells fibers and positive staining for S-100 and NSE confirms the diagnosis.[4,5]

Immunohistochemical staining performed for S100 showed diffuse nuclear and cytoplasmic staining of neurons and ganglion cells. (Figure 1E) Immunohistochemical staining performed for NSE showed strong cytoplasmic positivity for ganglion cells. (Figure 1F) The positivity for NSE and S100 helped to confirm the hyperplasia of nerve fibres and ganglion cells, which was highly suggestive of diffuse gastric ganglioneuromatosis, as these immunostains are specific for the nerve fibers.

3. Discussion

Gastrointestinal ganglioneuromatosis is a rare condition characterized by the presence of a significant proliferation of ganglion cells, schwann cells and nerve fibers in the wall of the stomach or intestine. The disease may affect any part of the gastrointestinal tract but ileum, gallbladder, colon and appendix are more frequently affected. The disease is very rare in adults and the stomach is an exceptionally rare site.[6]

Ganglioneuromatosis has a well-established association with MEN2B and less commonly associated with neurofibromatosis type 1. MEN2B is associated with germline mutation of RET proto-oncogene. Individuals with MEN2B has distinct physical features including mucosal neuroma of lip and tongue, ganglioneuromatosis of GIT, Marfanoid body habitus. Most patient with MEN2B report GI symptoms starting in infancy or early childhood.[2]

No genetic syndromes were identified in our case including Familial Adenomatous Polyposis (FAP) and Multiple Endocrine Neoplasia type 2B (MEN2B)

Clinical presentation of ganglioneuromatosis is quite variable including acute GI obstruction and motility disorder, reflex esophagitis or ganglioneuromatosis may be found incidentally during investigation for other pathology.[2] Case report by Al-Rikabi AC et al described case presented with gastic outlet obstruction[6] similar to our case study whereas case study done by Siderits R et al, described reflex esophagitis as the presenting feature.[7]

Gastric muscular mural hypertrophy and hyperplasia of nerve fibers may lead to stricture causing gastric outlet obstruction, as Al-Rikabi AC et al, found in their case described severe gastric outlet obstruction, most probably caused by a combination of muscular mural hypertrophy and hyperplasia of the myenteric plexus leading to stricture formation,[6] similar morphology seen in the present case study as well.

Diffuse ganglioneuromatosis is a poorly demarcated, nodular, and diffuse intramural or transmural proliferation of ganglioneuromatous tissue that diffusely involves the enteric, most often myenteric nerve plexuses. Histological growth pattern varies from fusiform, hyperplastic expansions of the myenteric plexus to confluent, irregular, transmural ganglioneuromatous proliferations that distort the myenteric plexus and infiltrates the adjacent bowel wall.[1]

Histologically, Diffuse ganglioneuromatosis usually show increased numbers of ganglion cells (7 to15 ganglion cells per plexus) with thickened and hypertrophied axons. Furthermore, A ganglioneuroma of the stomach is extremely unusual, and in this case surgery was done because of the described severe gastric outlet obstruction which was most probably caused by a combination of muscular mural hypertrophy and hyperplasia of the myenteric plexus leading to stricture formation.[6,8]

4. Conclusion

Obstructive gastrointestinal symptoms with a possibility of diffuse ganglioneuromatosis and intestinal neuronal dysplasia is mainly a disease of young children and infant. But an adult patient, which is an unusual age group for this condition presenting with obstructive gastrointestinal symptoms, the rare possibility of Diffuse ganglioneuromatosis and intestinal neuronal dysplasia should be considered and investigated in order to avoid unnecessary and extensive surgical intervention.

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7. Conflicts of Interest

There is no conflict of interest.

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