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Case Report

Gastric cyst of the posterior mediastinum in a child: An unusual presentation

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ABSTRACT

Gastric cyst of the posterior Mediastinum is a rare congenital anomaly of the gastrointestinal tract. They are classified according to their embryological origin, epithelial lining and location, as thymic cyst, cystic hygroma, mesothelial cysts, thoracic duct cyst and cystic malformation of the primitive foregut.
They usually present in neonates or in infancy and are discovered incidentally on radiological examination or gastric endoscopy. Accurate diagnosis of these cysts before resection is difficult and differential diagnosis are varied.
This case report presents a 6-year-old boy who complained of fever for 3 weeks. Chest X-ray revealed right para median oval shaped opacity. HRCT showed a well-defined cystic lesion measuring 9x4.4x3.3 cm in the right side of the posterior mediastinum in the perihilar location. There was also noted vertebral segmentation anomaly in the cervicothoracic spine. Cystectomy was and Gastric cyst was diagnosed through histopathological examination. This case report is presented for its rarity and an unusual delayed clinical presentation.

1. Introduction

Gastric cyst belongs to that group of congenital anomalies known as enteric duplications and that apparently arise from developmental defects of the primitive bowel.

Gastric cysts form 2-9% of all gastrointestinal cysts, and in general category of mediastinal tumours, gastric cysts are extremely rare. They can be found anywhere in the gastrointestinal tract, from the base of the tongue to the anus, most commonly occurring in the ileum (40%).[1]

Most cases will occur in females compared to males (8:1), with the majority of cases being diagnosed in the paediatric population within the first 3 months of life and rarely after 12 years of age.[2]

The first case report of a gastric duplication cyst was published in 1911 by Wendel. Gastric duplication cysts are spherical hollow structures with a smooth muscle coat, lined by the mucous membrane.[1]

Mediastinal gastric cysts are of at-most surgical importance, because without operative treatment they are almost invariably fatal. Unlike other mediastinal cysts-gastric cysts are symptomatic, for this reason they are discovered in disproportionate numbers in the first decade of life and are actually one of the commonest mediastinal cysts encountered in infancy.

Other congenital anomalies usually associated with the mediastinal cyst include: vertebral anomalies, meningoceles, talipes equinovarus, malrotation of intestines, oesophageal atresia, and congenital heart disease. The frequent association of vertebral anomalies and mediastinal (gastric) cyst can be explained on the basis of embryogenesis.

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2. Case Report

2.1. Clinical history and examination

A 6-year-old male child, presented with history of fever since 3 weeks. On evaluation chest X-ray revealed right para median oval shaped opacity. HRCT showed a well-defined cystic lesion measuring 9x4.4x3.3 cm in the right side of the posterior mediastinum in the perihilar location. Also noted vertebral segmentation anomaly in the cervicothoracic spine.

This case was surgically manged by cystectomy and the cyst was sent for histopathological examination.

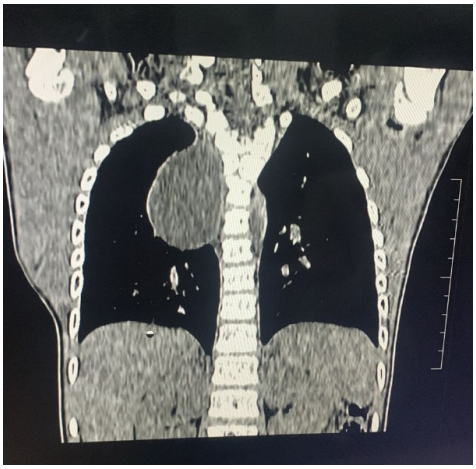

Figure 1: A well-defined cystic lesion measuring 9x4.4x3.3 cm on the right side of the posterior mediastinum

2.1.1. Gross examination

A cystic structure measuring 9x4x3 cm was received which had an external and cut surface of grey white to grey brown in colour

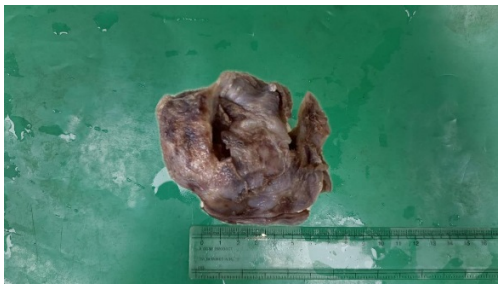

Figure 2: Cut surface of Cyst - Gray white to gray brown cyst measuring 9x4.4x3.3 cm

2.1.2. Microscpic examination

Haematoxylin and Eosin-stained sections showed two layers composed of muscularis mucosa with overlying mucosa and muscular layer. Mucosa is of gastric type with foveola and glands, also noted few lymphoid aggregates, nerve bundles and ganglion in the wall of the cyst

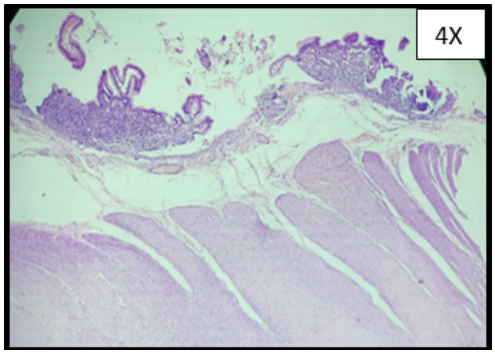

Figure 3: Low magnification (H&E) image of cyst showing all the layers resembling the stomach

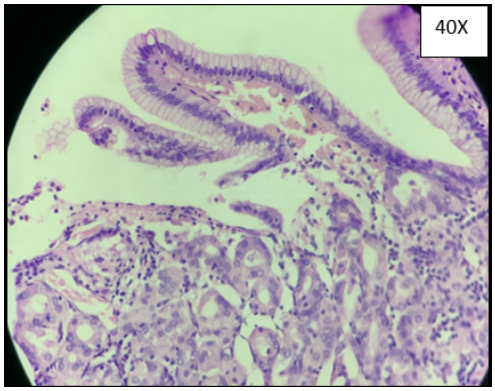

Figure 4: High magnification (H&E) image showing foveola and gastric mucosa

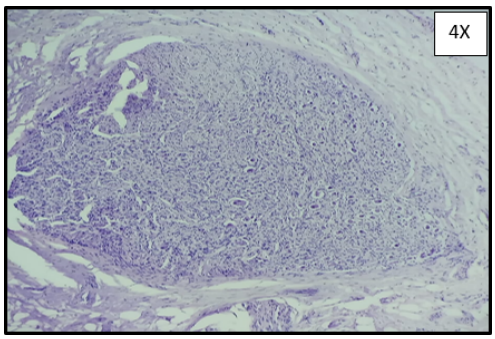

Figure 5: Low magnification image (H&E) showing nerve fibers and ganglia in the wall of the cyst

3. Discussion

Gastric cyst of mediastinum is the second most common GI duplication cyst. They can be found anywhere in the

gastrointestinal tract, from the base of the tongue to the anus, most commonly occurring in the ileum (40%).

Gastric cyst of mediastinum accounts for 4% of all gastrointestinal duplication cysts and 10-15% of all foregut duplication cysts. It is much rarer compared to all other gastrointestinal duplication cysts. Nevertheless, fewer than 100 cases of gastric cyst of mediastinum are currently documented.[3]

Histologically, the gastric cysts have a lining epithelium of gastric mucosa, with gastric glands and cells –such as chief and parietal cells-; a secreting-mucosa may be present. Renin, pepsin and hydrochloric acid are reported in the analysis of the secreting fluid. There can be present other type of epithelium in the same cyst such as small-intestinal, duodenal, respiratory, and esophageal mucosa. Muscularis mucosae is present resembling that of stomach, including Auerbach's plexus' cells and ganglia. A two, and sometimes three, layers of muscularis propria may be present.[4]

Affected children may complain of nonspecific oesophagus-related or respiratory tract symptoms, depending on the size and the presence or absence of complicating haemorrhage, infection, rupture, or respiratory tract and other tracheoesophageal/pulmonary malformations. These cysts are usually asymptomatic in adults, and are diagnosed incidentally.[4]

Preoperative oesophagography and EUS can help exclude coexisting malformations and outline the operative plan. Gastric duplication cysts can be removed using minimal invasive laparoscopic techniques or an open method; however, several physicians have also reported the use of endoscopic treatment.[3] In the present study minimally invasive surgery that is laparoscopic cystectomy was done. Aspiration of the cyst fluid will be helpful in endoscopic or laparoscopic procedures.[3]

Complete excision is recommended not only for symptomatic relief as seen with a gastric outlet obstruction, but also because of the risk of malignant degeneration. Though rarely reported, there have been at least 14 cases of adenocarcinoma diagnosed in gastric duplication cysts after resection in the English literature.[3]

Differential diagnoses are varied, including gastrointestinal stromal tumours (GISTs), neuroendocrine tumours, pancreatic heterotopia, pancreatic pseudocysts, and neurogenic tumours. Malignant transformation of a gastric duplication cysts is very rare.[3]

Iglesias Miramontes G et al[4] also published a case report of a 17-year-old male presented to the Emergency Department with a 1-day history of intense abdominal pain in upper quadrants, with irradiation to the dorsum, with no more symptoms. A complete double contrast abdominal computed tomography (CT) scan, showed the separation of the right paravertebral line, and a hidden spina bifida at S1. The thoracic window confirmed the separation mentioned above caused by an extrapulmonary, para-aortic and anterolateral thin-walled cyst of 83 x 39 x 40 mm, and passive atelectasis of the right posterior pulmonary segment. During thoracotomy, an irregular-shaped, rough, brown-colored cyst of 7.3 x 4.6 x 3 cm was totally excised. Histopathologically, a cystic malformation of the posterior mediastinum was found, containing gastric fundus-corpus and antral mucosa, submucosa, muscularis propria, and serosa.[5–11]

4. Conclusion

Gastric cyst is an uncommon differential diagnosis in children presenting with posterior-mediastinal cystic masses. They are characterized by their position in the posterior mediastinum and by frequent association with vertebral anomalies. Their walls have the alimentary type of muscular layers and a partial or complete lining of gastric mucosa. The appearance of symptoms and complications in early life is common, presenting within frist 3 months of life and is attributed to the secretion of acid by the lining gastric mucosa. However, when asymptomatic, a delayed presentation in childhood is a possibility and should be kept in mind while examining mediastinal cysts.

5. Source of Funding

None.

6. Conflict of Interest

None.

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