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ORIGINAL ARTICLE

Congenital Webs of the Gastrointestinal Tract: 20 Years of Experience From a Pediatric Care Teaching Hospital in Taiwan

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Key Words
congenital web;
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gastric web;
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jejunal web

Background: To classify and evaluate the clinical spectrum of congenital webs in the gastrointestinal (GI) tract, including clinical courses and related factors.
Methods: A retrospective chart review was performed on 37 patients with congenital GI webs at a pediatric care teaching hospital in north Taiwan. All of the related parameters were collected and analyzed.
Results: Twelve patients had gastric webs, 22 had duodenal webs, and three had jejunal webs. The mean time to diagnosis was 1576 days for gastric webs, 116 days for duodenal and 230 days for jejunal webs. There was a statistically significant difference between the gastric and duodenal groups ($p = 0.001$). The major symptom was vomiting (78%). Patients with duodenal webs had a high association with congenital anomalies (50%). The major anomalies included cardiac (27%) and GI anomalies (18%). Endoscopy was performed in 10 gastric cases, and all of them were noted to have positive findings, including a fixed nonfolded stenotic ring following a second gastric chamber and a real pylorus. All of the patients received surgery except for three with gastric webs, and no mortality was noted. The mean postoperative days of tolerated feeding was 6 for those with gastric webs, 10 for those with duodenal and 11 for those with jejunal webs.
Conclusion: The clinical course of gastrointestinal webs may be chronic or obscure. A delay from onset of symptoms to treatment may exist, especially in gastric webs. We suggest that prompt endoscopic confirmation and surgical intervention for these lesions, when suspected

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due to clinical and radiologic abnormalities, will decrease the morbidity of unexplained recurrent symptoms or signs of GI obstruction in these patients.

1. Introduction

Congenital web of the gastrointestinal (GI) tract is a rare anomaly causing GI obstruction in children and infants. It may develop at any site of the GI tract, but is most commonly found in the stomach and small intestine.[1] Gastric membrane is a rare cause of gastric outlet obstruction. Its symptoms can be seen in any age group, depending on the degree of obstruction caused.[2] Nissan et al[3] suggested that late-onset primary gastric outlet obstruction seems to be a different disease entity. In their series, patients developed symptoms, such as abdominal pain, recurrent nonbilious vomiting, and growth retardation after a variable period (range from 3 months to 17 years) of normal growth and food intake.[3]

A congenital web in the intestine is a type of intestinal atresia, and includes duodenal, jejunal and ileal webs.[1] The most common site of intestinal webs is the second portion of the duodenum.[4–7] Feng et al[8] noted that the incidence of gastric outlet obstruction, excluding infantile hypertrophic pyloric stenosis, was only one in 100,000 live births. The incidence of duodenal atresia has been reported to be about one in 5000 live births.[9] Burjonrappa et al[10] reported a series of 14 cases of jejuno-ileal webs in 131 cases of intestinal atresia (11%). However, the incidence of this entity is unknown. The aim of this study was to evaluate the clinical spectrum of congenital gastrointestinal web in pediatric patients.

2. Patients and Methods

A retrospective chart review was performed on cases with congenital gastrointestinal web or diaphragm diagnosed at Mackay Memorial Hospital from February 1990 to May 2010. Data including clinical presentations, time to diagnosis (means the time interval between birth and diagnosis), examination, associated congenital anomalies, prenatal insults, operative method and outcome were collected and analyzed. This study was approved by our institutional review board (10MMH-I-S-094). The Chi-square and Student *t* tests were used to compare category and continuous results, respectively, between groups with different web locations. A p value of <0.05 was considered significant.

3. Results

3.1. Demography

Thirty-seven patients were enrolled in this study, including 12 with gastric (32%), 22 with duodenal (60%) and three with jejunal webs (8%). The ratio of male gender was 75% in gastric, 59% in duodenal and 67% in jejunal webs. There was no significant difference statistically (Table 1). Prematurity was noted in five patients (14%), with a gestational age ranging from 33 to 36 weeks, and in these patients, one gastric, three duodenal and one jejunal webs were noted. With regards to the sites of the duodenal webs, one (5%) was located in the first, 15 (68%) in the second and six (27%) in the third portion of the duodenum. Eight patients had maternal polyhydramnios, including one with a gastric web, six with duodenal webs and one with a jejunal web. Of the six patients with duodenal webs, four were found to be small for gestational age at birth. A variety of associated congenital anomalies were noted, with cardiac and gastrointestinal abnormalities most frequently documented

Table 1 The demographic and positive-finding images in patients with gastrointestinal webs.

	Gastric $n = 12$	Duodenal $n = 22$	Jejunal $n = 3$
Male	9 (75%)	13 (59%)	2 (67%)
Female	3	9	1
Prematurity	1	3	1
Congential anomalies	1	12	1
Prenatal insults	1	5	1
Time to diagnosis*			
<30 days	2 (17)	15 (68)	2 (67)
1–12 months	3 (25)	5 (23)	—
>12 months	7 (58)	2 (9)	1 (33)
Mean (days)	1576 ± 1893*	116 ± 225*	230 ± 384
Image (positive finding/performed)			
Ultrasonography	2/8 (25%)	12/13 (92%)	1/3 (33%)
Plain abdomen	1/8 (13%)	18/20 (90%)	2/3 (67%)
Contrast radiography	8/9 (89%)	13/13 (100%)	3/3 (100%)
Gastroscopy	10/10 (100%)	0	0

Time to diagnosis: the time interval between birth and diagnosis.
* $p = 0.001$.