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Case Report

8-Year-Old Girl with Barrett's Esophagus due to Gastroesophageal Reflux Secondary to Hiatal Hernia

Víctor Hugo Hernández Lozada[1]*, Edgar Torres-López[2], Jesús Noé Serrano Becerra[1] and Mitsuko Herrera Sato[1]

[1]Department of General Surgery and Endoscopy, Hospital Multimédica Norte, Mexico

[2]Department of General Surgery and Endoscopy, Hospital Angeles Lindavista, Mexico

***Corresponding Author:** Víctor Hugo Hernández Lozada, Digestive Surgeon and Endoscopist, Hospital Multimédica Norte, Mexico.

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Abstract

Barrett's esophagus is a uncommon gastroesophageal reflux disease (GERD) complication in pediatric patients, being more prevalent in children with tracheoesophageal or neurological disorders. A case of an 8-year-old female patient is presented. A nissen-type fundoplication was done as a treatment to Barrett's esophagus without dysplasia, GERD and hiatal hernia.

Keywords: *C=Intestinal Metaplasia; Barret's Esophagus; Hiatal Hernia; Fundoplication*

Abbreviations

GERD: Gastroesophageal Reflux Disease; NBI: Narrow Banding Imaging

Introduction

Gastroesophageal reflux disease (GERD) in pediatric patients older than 2 years, is no longer considered physiological. In the pediatric population, the GERD is prevalent in patients with mental retardation, infantile cerebral palsy, Down syndrome, esophageal stenosis, esophageal atresia, hiatal hernia, bronchopulmonary dysplasia and cystic fibrosis [1-3]. It has been reported that patients with reflux symptoms for more than 5.3 years may develop Barrett's esophagus [4-6], which predisposes to esophageal adenocarcinoma by increasing the risk 30 to 40 times. In adult patients with Barrett´s esophagus diagnosis, endoscopic follow-up and esophageal biopsies should be done every 3 years to exclude dysplasia. And adult patients with more than 10 years of reflux symptoms are recommended to undergo an upper endoscopy. But there are no guidelines or consensus on the screening or medical monitoring in children with prolonged gastroesophageal reflux [1,4,7].

Case Report

An 8-year-old female patient had undergone an upper endoscopy on December 05th, 2017 for heartburn symptoms with the following findings: acute mild hemorrhagic and erosive peptic gastroduodenitis classified as Forrest III, Sakita A2 and small sliding hiatal hernia complicated with esophagitis classified as Savary Miller I (Figure 1); and the biopsies of the distal third of the esophagus reported Barrett type metaplasia. She was treated with omeprazole 20 mg 1 tablet orally every 24 hours for a month and had symptoms improvement.

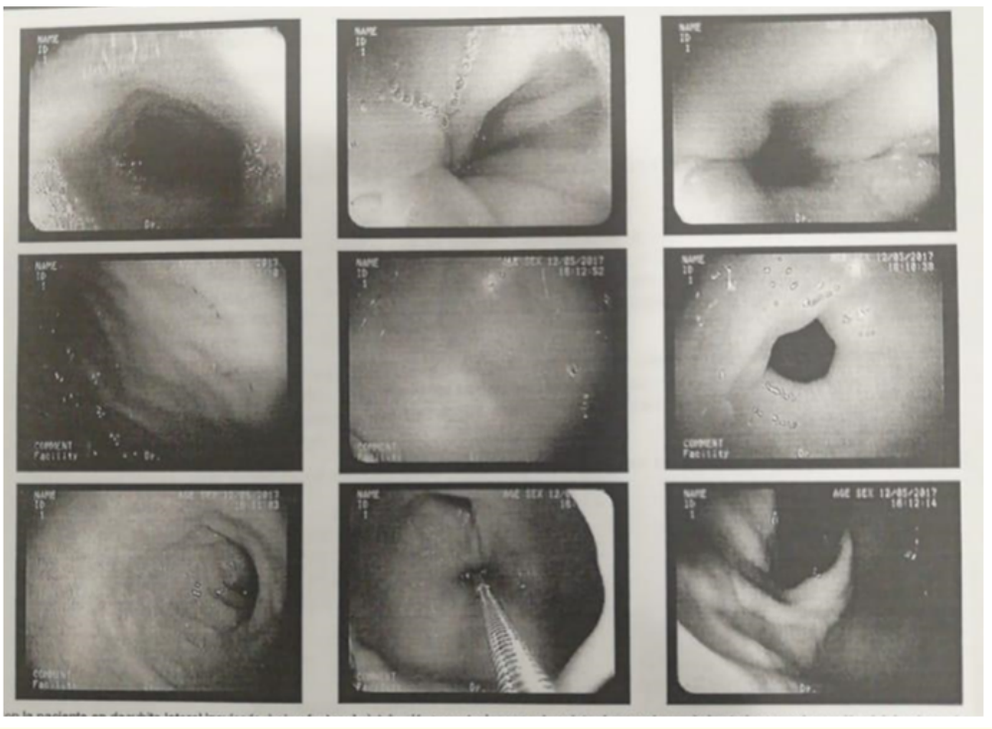

Figure 1: *Upper endoscopy from December 2017.*

The patient had symptoms recidive and was admitted to the hospital (September 24th, 2018) due to 3 weeks of postprandial chest and epigastric pain. She had hypertriglyceridemia (997 mg/dL) and hypercholesterolemia at the expense of VLDL cholesterol (199.3 U/L), which decreases with fasting to 317 mg/dl of triglycerides and 63U/L. In the workup, upper gastrointestinal study was performed, identifying a hiatal hernia (Figure 2).

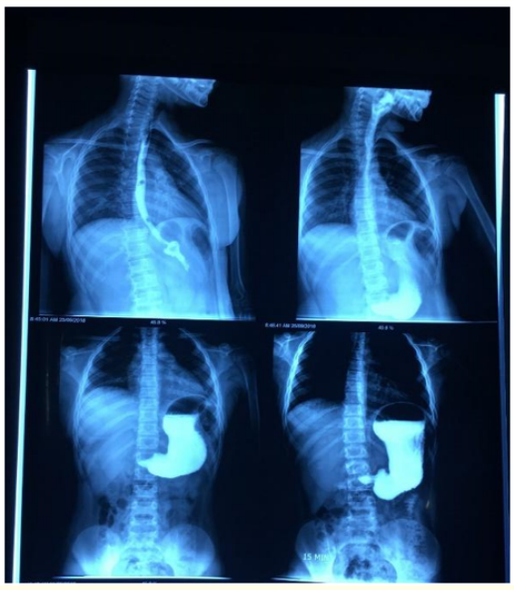

Figure 2: *Esophagogastroduodenal series with contrast (September 2018).*

A second upper endoscopy showed a 3 cm sliding hiatal hernia complicated with esophagitis Savary Miller III, intestinal metaplasia at the squamocolumnar junction. Esophageal mucosa biopsies were taken following the Seattle protocol (Figure 3). She was treated with 7 ml cisapride orally every 24 hours, 15 minutes before meal; esomeprazole 40 mg a tablet every 24 hours and magaldrate with dimethicone orally every 8 hours for 14 days.

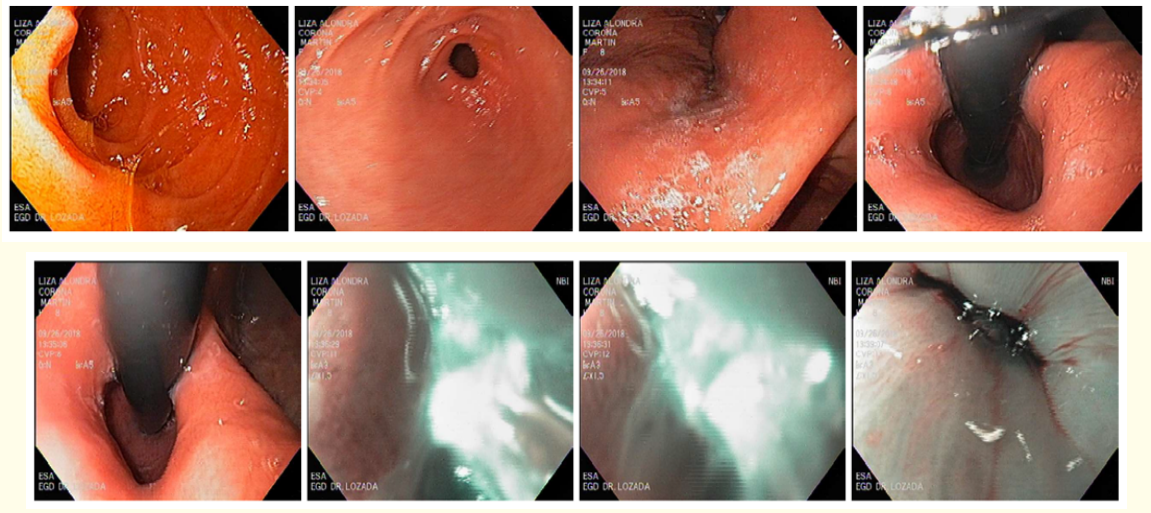

Figure 3: *Upper endoscopy September 26, 2018.*

The histopathology report showed a moderate chronic esophagitis grade II with chronic damage compatible with reflux and with Barrett's disease with antral gastric glandular metaplasia without dysplasia (Figure 4).

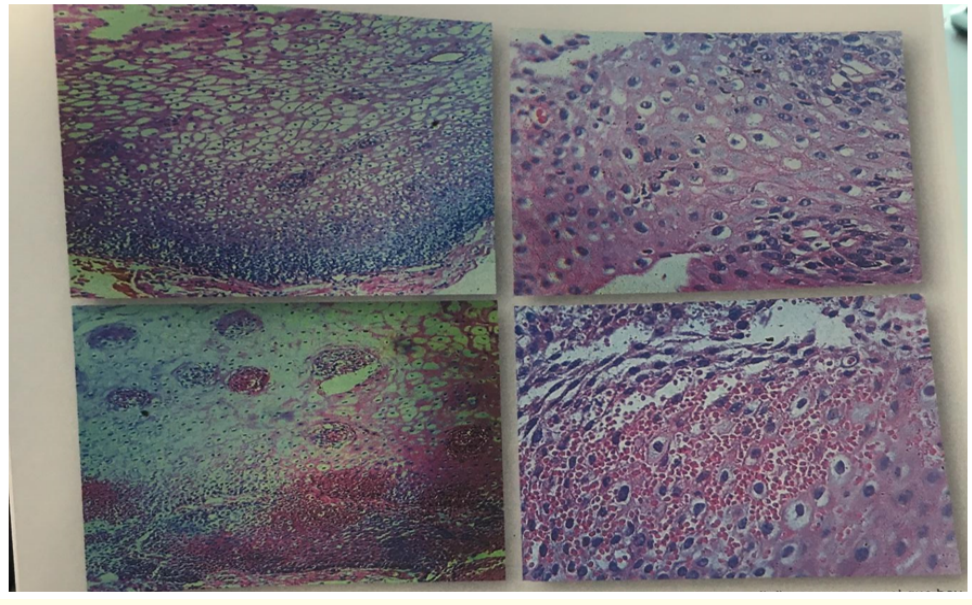

Figure 4: *October 2nd, 2018 metaplasia with squamous epithelium in which there is regeneration with hyperplasia of the basal cells with acanthosis of the epithelium, with intracellular glycogen, inflammatory cells in the thickness of the epithelium and with foci of hemorrhage of the esophageal epithelium by damage compatible to acid reflux.*

Since her symptom came back after suspending pharmacological treatment, and based on the endoscopic and histopathological findings, she was treated surgically with laparoscopic Nissen Fundoplication on October 18, 2018, with no complication (Figure 5). After three months follow up, she is symptoms free.

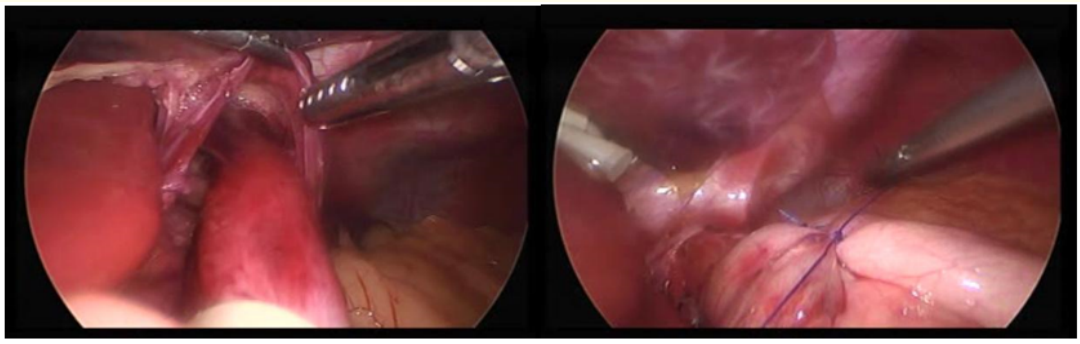

Figure 5: *Laparoscopic Nissen fundoplication (October 18, 2018).*

Discussion

GERD in the pediatric population older than 2 years without neurodevelopmental delay or tracheoesophageal abnormalities are uncommon [4,8,9]. There are few reported cases of Barrett's esophagus in children, up to 10% of children with GERD.

Nguyen's study showed that pediatric patients (average 9.5 years old) with suspected Barrett's esophagus had a higher body mass index (BMI 23) and referred chest pain (50%) [2]. In Dahms study, patients had a history of chronic regurgitation, but none with a hiatal hernia [5]. Hassal reports a case of a 17-year-old boy post-operated with esophagectomy due to high-grade multifocal dysplasia and adenocarcinoma in Barrett's esophagus and suggests starting endoscopic surveillance after 10 years of age in children with Barrett's esophagus [10].

Surgical treatment for GERD is reserved for refractory cases to pharmacological treatment or with a high risk of complications. For symptomatic hiatal hernia, surgery is the treatment of choice. The most commonly used is the fundoplication to prevent reflux by increasing the pressure of the lower esophageal sphincter, reducing the hiatal hernia by crural repair and accentuating the valve effect of the angle of His [1,3,9,11]. Fundoplication is associated in small number of cases with Barrett's esophagus regression [1,5,6]. Endoscopic ablation is recommended for dysplasia progression of Barret's esophagus [12,13]. Ablation methods include mucosal resection, radiofrequency ablation, coagulation with argon plasma and cryotherapy, tehes tree last methods allow greater coverage of mucosa, but it is impossible further mucosal histopathology studies [12]. In Phoa's study, there was a reduction in neoplastic progression in an endoscopic follow-up of 3 years after radiofrequency ablation of patients with Barrett esophagus with low-grade dysplasia [14]. In Angelis's study, a regression of 90% was reported of the metaplastic-dysplastic tissue of patients (between 12 and 30 years of age) post-operated by fundoplication due to hiatal hernia, after 4 sessions of radiofrequency ablation at 6.3 months of follow-up [15].

Conclusion

Pediatric patient with Barrett's esophagus associated with gastroesophageal reflux and sliding hiatal hernia had a higher risk of progression to dysplasia of the esophagic metaplasia, mainly because of their young age.

To avoid long term of pharmacological treatment, surgery seems to be a better option to reduce the exposure of the esophagus to acid reflux that contributes to the progression of the Barrett's esophagus. A consensus of the screening and follow up of pediatric patients with Barrett's esophagus is needed.

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