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Caustic Esophageal Stenosis: Epidemiological, Clinical, Endoscopic and Therapeutic Aspects at the Gabriel Touré University Hospital in Bamako

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Abstract

Voluntary or accidental ingestion of a caustic product is increasingly encountered in our country. Caustic esophageal stenosis is the most common sequel. Its treatment involves instrumental dilation and/or surgery which is particularly heavy. The aim of this study was to study the epidemiological, clinical and therapeutic aspects of caustic esophageal strictures in our context. The retrospective study took place from December 2013 to December 2017 in the Hepato-Gastroenterology department of the Gabriel Touré university hospital in Bamako. We included patients with caustic esophageal stenosis referred to the gastrointestinal endoscopy unit for dilation. 67 patients admitted for caustic stenosis were included. The mean age of our patients was 20.76 ± 19.9 years with extremes of 1 and 70 years and a sex ratio of 1.9. In 50.7% of cases, the product ingested was basic in nature. The clinical symptomatology was dominated by dysphagia (100%), vomiting (100%), the emaciated (60%) and cough (40%). In 59 (88%) patients, the stenosis was unique and multiple in 8 (12%). The KILLIAN mouth as the sole site of the stenosis was found in 40.3% of patients. The number of sessions was ≤ 3 in 16.4% and >3 in 83.6% with a mean of 4.59 ± 1.57 sessions. The evolution was favorable in 95.5% of our patients. However, we recorded three (3) cases of death all following a perforation. **Conclusion:** Caustic esophageal stenosis, a consequence of ingestion of caustics, is increasingly observed in our context. Endoscopic dilation occupies an important place in its management.

Keywords

Causticstenosis, Esophagus, Endoscopic Dilatation

1. Introduction

The voluntary or accidental ingestion of caustic is increasingly encountered in our country and is a real public health problem today. The resulting complications can be serious and deadly, involving the vital prognosis or causing disabling sequelae. Caustic esophageal stenosis (SCO), the most frequent sequel to these burns, can be severe, leading to dysphagia or even aphagia with a deficit in weight and a significant deterioration in the patient's quality of life [1]. Its treatment involves instrumental dilation and/or surgery, which is particularly heavy [2] [3]. The incidence of caustic accidents varies from region to region. While this incidence is clearly decreasing in developed countries thanks to legislation and information campaigns carried out among parents and industry. However, it remains high in developing countries in the absence of adequate measures. In Africa, Oumnia *et al*. collected 132 cases of caustic esophageal stenosis in four years [1] while Yéna *et al*. collected 67 cases in seven years [4]. Formerly mainly surgical, the treatment of caustic esophageal stenosis has become accessible to endoscopic dilation as a first-line. Surgery now seems to be reserved for dilation failures and can even, in some cases, be coupled to it [5]. Caustic burns are relatively frequent in our department and their management is difficult because of the insufficient technical platform and the delay in the consultation. We initiated this work with the aim of studying its epidemiological, clinical and therapeutic aspects.

2. Patients and Method

This was a retrospective study extending from December 2013 to December 2017 in the hepato-gastroenterology department of the Gabriel Touré university hospital in Bamako/Mali. Our inclusion criteria were:

- Patients with esophageal stricture after ingestion of caustic products;
- Caustic stenosis having benefited from endoscopic dilation sessions.

Non-caustic esophageal strictures were excluded. For the development of this work we used the department registers, patient records and the reports of gastrointestinal endoscopy accounts.

We studied:

- The demographic data (age, sex, occupation);
- The nature of the caustic product, the clinical manifestations;
- The morphological lesions endoscopic and radiological (transit œsogastro-duodénal);
- The therapeutic techniques (instrumental expansion and/or surgery) and evolution.

For the endoscopic dilation, we used a metal guide wire fitted at its end with a very flexible tip or a hydrophilic guide wire, a set of candles semi-transparent GUILLARD (diameter from 5 to 18 mm) and/or a pneumatic dilator (through the scope TTS balloon).

All dilation sessions were performed on an outpatient basis, without general anesthesia. The fasting patients on the day of dilation received as premedication an intravenous injection of 10 mg of diluted diazepam, 5% glucose serum and 5 mm before the session pharyngeal anesthesia was performed with 2% viscous lidocaine. After premedication, the patient is placed in a left lateral decubitus position. First, an upper gastrointestinal endoscopy is performed with an adult or pediatric video endoscope (most often). The fiberscope is introduced to the level of the upper opening of the stenosis. The guidewire is introduced into the working canal, and then carefully pushed under visual control, through the stenosis, into the stomach, for a length of at least 30 cm. The fiberscope is then withdrawn slowly while holding the guidewire in place. The successive dilation is then carried out taking into account the diameter of the stenosis, with the candles of increasing caliber threaded on the guidewire without exceeding 03 candles per session. The passage of the candle through the stenotic segment is marked by a sensation of jumping preceded by resistance, usually moderate. But faced with any abnormally strong resistance and if the stenosis is complex in the oeso-gastroduodenal transit, the pneumatic dilator is first used under visual control and in parallel with the pediatric endoscope before the candles of SAVARY GUILLARD. After each dilation, an endoscopic check is made to assess the mucosa. Once the last candle has passed, the guidewire is completely removed after endoscopic control. The patient is then put placed on a Proton Pump Inhibitor (PPI) and paracetamol in case of pain, and allowed to eat 3 hours after the session for children and 6 hours for adults.

Data entry and data analysis were performed on SPSS 12.0 software for Windows. We simply entered texts and tables on the World and Excel software. The confidentiality of the data collected was guaranteed. The Chi-square statistical test was used to compare our results which were significant for a probability $p < 0.05$.

3. Results

In this study 67 patients admitted for caustic stenosis were included. On the socio-demographic level (Table 1): the mean age of the patients was 20.76 ± 19.9 years with extremes of 1 and 70 years and a sex ratio of 1.9. In 49.3% our patients had no professional activity. In 50.7% of cases, the product ingested was a base and in 49.3% an acid. The clinical symptomatology was dominated by dysphagia (100%), vomiting (100%), the emaciated and cough (40%). In 88% of patients the stenosis was single and multiple in 12% (six cases of double stenosis and six cases of triple stenosis) (Table 2). For single stenosis, Killian's mouth was the site in 40.3% of cases, the middle 1/3 of the esophagus in 10.4%, and the lower 1/3 in 34.3%. For double stenosis, 3% were located at the level of the middle 1/3 and lower 1/3, 7.5% at the level of Killian's mouth and of the middle 1/3 and 4.5% at the level of the mouth of Killian and the lower 1/3 of the esophagus. (Table 3). The number of sessions was ≤3 in 16.4% and >3 in 83.6% with an

Table 1. Sociodemographic data.

Sociodemographic data	Numbers n = 67	%
Sex		
Male	44	65.7
Female	23	34.3
Age in years		
1 - 20	33	49.3
21 - 40	23	34.3
41 - 60	9	13.4
61 - 80	2	3
Profession		
Housewife	11	16.4
Cultivator	**5**	**7.5**
Trader	7	10.4
Student	3	4.5
Civil servant	2	3
Worker	6	8.9
No occupation	**33**	**49.3**

Table 2. Distribution of patients according to the number of stenosis.

Number of stenosis	Numbers	%
Single	59	88
Double	4	6
Triple	4	6
Total	67	100

Table 3. Distribution of patients according to the topography of the lesions.

Topography of lesions	Numbers	%
Stenosis of the mouth of Killian	27	40.3
1/3 middle esophagus	7	10.4
1/3 middle and lower esophagus	2	3
Killian's mouth stenosis + middle 1/3 esophagus	5	7.5
Stenosis of Killian's mouth and lower 1/3 of the esophagus	3	4.5
1/3 lower esophagus	23	34.3
Total	67	100

average of 4.59 ± 1.57 sessions (Table 4). The interval between dilation sessions was 4 weeks. The outcome was often favorable after dilation in 95.5% of our patients. Complications accounted for 4.5% of the type of perforation leading to the death of these patients after their transfer to surgery. We found a statistically significant relationship between the number of dilation sessions and the course of the disease (Table 5).

Table 4. Distribution of patients according to the number of dilation sessions.

Number of session	Numbers	%
1	4	6
2	1	1.5
3	6	8.9
4	31	46.3
5	6	8.9
6	13	19.4
7	1	1.5
8	5	7.5
Total	67	100

Table 5. Distribution of patients according to the evolution and the number of dilation sessions.

Evolution	Favorable		Deceased	
Number of session	Number	%	Number	%
1	1	1.6	2	66.7
2	1	1.6	0	0
3	6	9.3	0	0
4	30	46.9	1	33.3
5	6	9.3	0	0
6	14	21.9	0	0
7	1	1.6	0	0
8	5	7.8	0	0
Total	64	100	3	100

$Khi^2 = 21.34$; $p = 0.0032$; ddl = 7.

4. Discussion

We collected 67 patients who underwent endoscopic dilation. Our sample was limited by the difficulties in achieving dilation in some patients for financial reasons. The sex-ratio was 1.9. This male predominance has also been reported by Rakesh *et al.* [6] and Togo *et al.* [7]. The mean age of our patients was 20.76 ± 19.9 years. Rheman *et al.* [8] found in their study an average age of 19.25 years while Rakesh *et al.* [6] found an average age of 35.5 years. Although this incident affects all age groups, it occurs more frequently in adolescents and young adults. This is often an impulsive act, as this period is characterized by the onset of psycho-affective disorders in a context of emotional immaturity or isolation, which may explain this high percentage. In our study, in 50.7% of cases the product ingested was a baseline against 85.1% in that of Sanchez *et al.* [9] and 89.2% in the series of Rakesh *et al.* [6]. It has been reported that alkaline substances account for most cases of caustic ingestion in developed countries while acid ingestion is more common in developing ones [10]. The clinical symptomatology

was dominated by dysphagia (100%), vomiting (100%), the emaciated and cough (40%). Ahmed *et al*. [11] reported 76.7% dysphagia, 69.8% vomiting and 4.2% epigastric pain. In 59 patients (88%) the stenosis was unique and multiple in 8 patients (12%). The strictures were preferentially located at the level of the Killian mouth and in the lower 1/3 of the esophagus. Mekki *et al*. [12] demonstrated the stricture at the upper 1/3 level in 40% of patients, 2/3 higher in 40%, 1/3 mean in 10% and 1/3 lower in 10%. The number of sessions was ≤ 3 in 16.4% and >3 in 83.6% with an average of 4.59 ± 1.57. Youn *et al*. [13] and Ahmed *et al*. [11] respectively reported an average number of sessions of 4 and 3. The evolution was favorable with resumption of feeding in 95.5% of our patients. Our success rate is higher than that of Geng *et al*. [14] who found a favorable outcome in 60.5% of cases and significantly higher than that of Tadmori *et al*. [15] who found 30% success. Three cases of perforation complicated the procedure.

5. Conclusion

Caustic esophageal stenosis is the main long-term complication of caustic ingestion. It is more and more common in our country. Endoscopic dilation is a simple, effective and accessible therapeutic means in our context. However, prevention remains the best treatment for caustic burns.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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