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Original Paper

Caustic stenosis of the oesophagus at Centre Hôpital D'Université(CHU) of Lome :Epidemiological and therapeutic aspects

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Abstract

Objective: The purpose of this study, was studying of the epidemiological factors and the results of management of these caustic stenosis of the oesophagus.
Material And Method: A retrospective study. 38 cases of caustic stenosis of the oesophagus were, admitted and treated at the surgical departments of CHU of Lome, Togo, during the period January 1st 1983 to 31st December 2004.
Result: The caustic stenosis of the oesophagus represented the second most common oesophageal disease treated at the surgical department [38/15153(24.84%)]. 21 were male and 17 female. Caustic soda was the commonest substance ingested (14 cases / 38). Suicide was the most frequent reason for ingestion of caustic substances.
The majority of our patients 28(71.05%) had early surgical intervention. The others were managed by endoscopy. The overall outcome was satisfactory in 37 cases. One patient died in this study. After a follow-up of a median of 7 years, four patients re- presented a moderate residual dysphagia.
Conclusion: This caustic stenosis of the oesophagus represents a disease with an increasing frequency inside our societies. Adequate measures must be carried out to prevent the caustic burns of the oesophagus among our peoples.
Keys words: esophagus, stenosis(stricture), caustic

Introduction

Caustic lesions of the oesophagus represents a severe disease which may cause immediate death in cases of severe burns. They may also be the cause of severe life threatening metabolic insult, which may progress to death later on.Caustic burns are more frequently caused by ingestion of chemicals accidentally, but may be ingested as an attempt at suicide or in some instances of psychiatric illness. In Africa burns caused by ingestion of caustic chemicals are frequently encountered in children . During the last 5 years, at CHU of Lomé, we have noticed a gradual rise in number of patients presenting with oesophageal stenosis following ingestion of different chemicals. This study was designed to review the epidemiological factors in chemical oesophageal stenosis and the outcome of management at the surgical department of CHU of Lomé.

Material & Method

A retrospective study done on 38 caustic strictures of the oesophagus admitted treated in the 21 year period from 1st January 1983 to 31st December 2004 at the department of surgery at the CHU of Lomé.The files of patients managed for caustic stricture of the oesophagus following caustic burns were studied. Patients with primary cancers of oesophagus, mega-oesophagus, achalasia of oesophagus and cardiospasm were excluded. Data extracted included sex and age of patients, nature and quantity of ingested caustic, reason for ingestion of caustic solution, the interval between the ingestion of the caustic, onset of dysphagia. Also studied was the type of stricture, the applied endoscopic treatment, the indications and methods of surgical treatment and the results of intervention.

Results

Out of 153(94 cancers,21 achalasia and 38 caustic strictures), 38/153 (24.84%) were managed for esophageal strictures.

21 were males and 17 females with a M:F ratio of 1.23:1.The age range was (6-36 years) with a mean of 22.08 years .

The ingested substance was caustic(alkali) in 21 /38 cases and acid in 16 cases(7 were sulphuric acid 5 hydrochloric acid and 4 a bleaching agent(javel water)). The agent was not identified in one patient.

The quantity of the ingested chemical was quantified to be 18 to 50 cm3.

The reason for ingestion of the chemical was i, 16 attempted suicide ii, 14 accidental and iii, psychiatric illness in 3 patients. There was no clear reason in 5 cases

More women attempted suicide than males (11 females/ 5 males), and more men than women drank the chemical by accident (10 males/ 4 females)

The interval between the ingestion of caustic and occurrence of the stricture is indicated in Table III

4 patients developed stricture in the hospital while in I.C.U. between the 3rd and 4th week after the ingestion. In 34 patients the onset of dysphagia was reported from the 8th week and above.

All patients had a Barium meal to outline the oesophagus and to further evaluate the location and type of stricture and any other complication.

The stricture was located in 2 sites in 4 cases and one site in 7 cases, multiple in 10 patients and involving entire esophagus in 17 cases.

Treatment was by endoscopic dilatation and surgery. In 4 patients dilatation commenced on the 3rd week after injury. In 7 patients dilatation was commenced on presentation as they had presented late with formed strictures long after ingestion of the chemical.

11 patients had surgical intervention after failed attempts at dilatation.

Among patients operated esophageal replacement using right colonic transposition was done through the posterior mediastianum in 6 patients and, retrosternal in 24 patients .

Transverse colonic esophagheal retrosternal replacement was done in 4 cases.

Temporary feeding jejunostomy was required in 4 patients post operative till they resumed normal oral feeding. There was one death among the 11 operated patients from mediastinitis following perforation of the oesophagus during dilatation.

On follow up four patients presented with stricturing at the cervical anastomosis and died at different times during a regime of repeated cervical dilatation.

Dedicated follow up of patient was for a median of 7 years with a range of 2 -13 years, All the 37 living patients were followed up closely for the first two years. Within this 2 years four patients presented with moderate dysphagia and were managed by dilatation. Dysphagia in all caused by cervical stenosis at the site of anastomosis. The others were asymptomatic. For the period of 7 years (1999-2006) we have lost many of the patients to follow up.

Table 11:Nature of ingested chemical

Ingested Chemical.	M	F	
Alkali(soda /potassium)	12	9	21
$HOcl_2$	2	2	4
HCl	2	3	5
H_2SO_4	5	2	7
Unknown		1	1
Total	21	17	38

($HoCl_2$=Hypocloride,Hcl= Hydrochloric acid, $H_2SO_{4=}$ sulphuric acid)

Table 1
Yearly incidence of esophageal disease (1983-2004):

Year	Esophageal stenosis	esophageal Cancer	Mega-esophagus	Total
1983	1	3	1	5
1984	1	4		5
1985	2	2	1	5
1986	1	5		6
1987	2	5	1	8
1988	1	5		6
1989	1	4	1	6
1990	2	6		8
1991	2	5	2	9
1992	1	3		4
1993	1	3	1	5
1994	2	4		6
1995	1	5	2	8
1996	1	4	1	6
1997	1	5	2	8
1998	2	5	1	8
1999	2	4		2
2000	2	3	2	7*
2001	3	6		9*
2002	2	5	3	10*
2003	3	3	1	7*
2004	4	5	2	11*
Total	38	94	21	153

*Rising incidence.

Discussion

Chemical oesophageal stricture is second after cancer of oesophagus among oesophageal diseases managed in the surgery department during the period of our study. There has been an increase in the number of strictures treated with a peak in the last 6 years of this study (1998-2004). The initial management of the patients and follow up dilatation was in different departments(surgery, oto-rhino-laryngological , Gastrointestinal endoscopy unit) but all surgical interventions for strictures were in the surgery department. There was a gradual increase in the yearly incidence of strictures from 1983 to 2003 with an average yearly incidence of 1.81. The easy access to caustic soda which is an ingredient in the local manufacture of soap, makes it the most common agent ingested for all reasons. The observation has been made by Abi and colleagues. [5] Men were more commonly affected as was also reported by Mignonsin [6] in Côte-d'Ivoire and Aghaji in Nigeria [7]. We do not find any explanation for the male predominance of the caustic stricture of the oesophages in our series. The mean age was 22 years, in our series same and corresponds with observations by Mignonsin [6] and Abi[5] in their reports. Caustic solutions were most commonly ingested by men with the intention of suicide while the acids were ingested commonly by accidents. In their reports Paris and Mignonsin] showed that caustic soda was a more frequent cause of esophageal burns compared to acids. [,9] Overall in 16 patients the intension for ingesting the caustic solution was suicide and, accidentally in 14 patients. There is no difference in the incidence of patients ingesting caustic solutions with suicidal intent in both developed and under developed countries. [9] The often quoted incidence of patients ingesting caustic solutions with suicidal intent is 60- 84.21%[6,8] for both the developed and developing world. When we classified esopahageal stricture by severity 17 were complete strictures 10 multiple strictures skipping

areas of normal esophageal mucosa and in 4 patients there were 2 strictured areas . 31/38 strictures were considered difficult (long or s multiple strictures) . The degree of stricturing depends directly on the amount and concentration of caustics solution Berthet[11] showed that patients ingesting large amounts >50mls of caustic solution developed long length difficult strictures and all those drinking less than 15 mls in his study involving 225 patients did not develop difficult strictures. The optimum and satisfactory management of the esophageal the stricture is surgical reconstruction and repeated dilatation has often failed and final resort made to surgery. The emergency patient is better managed in the ICU and vomiting; induced or otherwise should be prevented. An urgent esophaogoscopy can be rewarding and if a flexible is available may be more suitable for initial evaluation of the oesophageal mucosa and finally placing a suitable naso-gastric tube[12] . The usefulness of early administration of cortisteroid, antibiotic and hypernitrogenic and hypercaloric parenteral alimentation has been questioned[5,8,13]. This is usually not useful to the patient with a small to moderate lesion [8]. A multidisciplinary team consisting the surgeon, gastroenterologist , intensive care specialist and nutritionist must be formed early. The value of pentoxy-fylline and alpha-interferon caustic oesophageal burns have been studied in the rat. In his work, Apaydin[14] indicated that these molecules prevents the formation of the oesophageal stricture in the rats oesophagus which was burned by instilling, 37.5% sodium hydroxide (Na OH)and rinsed with physiological serum for 90 seconds. It is possible that by extrapolation these substances may be valuable in preventing esophageal burns in the humans when applied early.Esophageal strictures may be managed by pneumatic or instrumental dilatation. This type of treatment should be commenced when inflammation has settled if not bleeding can be life threatening[15] . Dilatation should be spaced out during the first 3 months according to the individual patient making ,it more often in patients with more than one stricture and those with long segments. This dilatation may be accompanied by concomitant administration of corticosteroids. In our series, 11 patients were treated by dilatation. Among our patients four presented early and dilation was structured while 7 others came late and presenting with already well formed strictures. Dilatation was complicated by esophageal perforation in one patient with severe mediastinitis in one patient among those presenting late. Esophageal perforation may be complicated by vagal injury as previously reported, by Ferraro and colleagues with high case fatality[16]. It appears to be commoner when heavv handed dilatation is done on a patient with a tight circumferential stricture . The radical surgical treatment, in the management of the oesophageal caustic strictures, is immediately indicated in the high strictured, multifocal strictures but are known to ingested. The average amount of ingested alkali was 22.5 mls with a rangeof 15-50mls. Rui Celso[10] has demonstrated that patients ingesting less than 15mls of alkali were likely to develop less stricturing and indeed can be managed conservatively. While rapidly recur post- dilatations[5] . With each repeat; dilatation become inefficient, poorly tolerated or complicated by perforation. The surgery must be carried out better after the 3rd month[13] . All our patients were operated upon at the 3rd month after the accident. The surgical treatment includes replacing the stenosed oesophagus by a gastroplasty if the stomach is normal or by using the left colon, the transverse colon or the right ileo-colon. We carried out 6 posterior mediastinal colonic oesophagoplasties with resection of the tumour and in 28 patients, a retrosternal colonic oesophagoplasty was done without resection of the diseased oesophagus. Failure to excise the burned oesophagus may be complicated later by mucocele formation or carcinoma of oesophagus in the long term . In his study, Kim[17] treating. 54 oesophageal strictures by retrosternal colonic replacement, noticed the occurrence of carcinoma in 7 cases of his patients who had esophageal strictures left in situ . It would therefore appear that removal of the diseased oesophagus at esophageal replacement is useful in removing the risk of cancer developing in the esophageal stricture.The posterior mediastinal colonic oesophageal replacement appears to be the suitable route in the treatment of these strictured esophagus. In his report Adegboye in Ibadan found this an overall good approach in his study [8]. This intervention consists of ablation of the oesophagus by passing through the oesophageal hiatus of diaphragm ensuring adequate hemostasis of the thoracic oesophagus. The esophagus should be removed to the thoracic inlet[trans-hiatal oesophagectomy (THO)]. The (THO), and replacement by the left colon by Bassiouny[19] , found this the best therapeutic approach for the treatment of the caustic oesophageal strictures . In his work using colonic oesophageal replacement in enfants by the transhiatal and retrosternal passages in 28 chilodren, Pompéo[20] , noticed that the THO constitutes the best functional colic replacement.In our study, we carried out THO in 6 patients satisfactorily. The ablation of the diseased oesophagus can be done by thoracoscopy in combination with laparotomy and cervicectomy and esopahagus replaced with colon. There are advantages of this method including the precision at dissection of the mediastimal structures, minimal blood loss , minimal post-operative pain and short period of hospital stay[21] . Lins experience with this technique was: duration of surgery; 3.9 hours; average blood loss s 100 ml; and the average period of hospitalisation was 9 days; the operative results were satisfactory. There was no death and all the patients could resume swallowing solid food within 18 months 22. Although, we lack facilities for thoracoscopy in our centre nontheless our results were not discouraging.

Conclusion

In conclusion this devastating disease of the alimentary tract is best prevented by keeping liquid chemicals out of reach. If however they do occur the patient must be managed by a team of experts. Initial resuscitation is best in an ICU and early non operative care must be programmed and clear protocols followed. Efficient early care reduces the magnitude of later surgical intervention. Leaving back the diseased esophageal segment at replacement is associated with several complications including risk of malignant change and is best removed if possible by minimum invasion if added facilities of thoracoscopy are available.

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III