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Factors Related to the High Incidence of Complications of Peptic Ulcers in Madagascar

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Abstract

Introduction: Peptic ulcer is a loss of substance that digs more or less deeply into the gastric or duodenal wall. Contrary to rich countries, complications of peptic ulcers still have a high incidence in Madagascar. Our objective was to assess factors related to this high incidence of peptic ulcer complications in a low-income country like Madagascar.

Patients and Methods: Our study was prospective, monocentric reported on complicated peptic ulcers over a period of two months. Variables studied included: type of complication that occurred, *Helicobacter pylori* (Hp) infection, personal medical history, toxic and drug habits, diet, treatment. The Epiinfo statistical test analyzed the data. A p value of less than 0.05 was considered significant.

Conclusion: In Madagascar, complicated peptic ulcers are still topical. The prevalence of *Helicobacter pylori* infection and poor adherence to treatment remain major problems, increasing patient morbidity and mortality.

Keywords: Complications; Helicobacter pylori; Madagascar; Peptic ulcer

Introduction

Peptic ulcer is a loss of substance that digs more or less deeply into the gastric or duodenal wall [1]. The mortality rate from complications of gastric ulcers is 2.5%, duodenal ulcers is 1% in Europe [1,2]. In Africa, it still causes a national health problem as 80% of the population is infected with *Helicobacter pylori (Hp)* [2]. The main complications are serious and/or urgent without adequate management, namely: digestive haemorrhages and gastric perforations on ulcers in their acute forms, pyloric stenoses and malignant degeneration in the chronic forms. These complications can occur on an already known ulcer or be indicative of the disease [3]. Any factors influence the course of the disease and the occurrence of these complications. These factors may be intrinsic or external [3]. In low income country like Madagascar the treatment and the endoscopy are sometimes impossible because they are not on charge by the state. The aim of our study is to evaluate factors related to the occurrence of complications of peptic ulcers in low income country like Madagascar for avoid increasing patient morbidity and mortality.

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Patients and Method

This was a prospective case series of complications of peptic ulcers hospitalized at the Joseph Ravoahangy Andrianavalona Hospital Center over a period of two months. Digestive hemorrhages, gastric perforations discovered with an acute peritonitis, symptomatic pyloric stenosis, gastric cancers were included in our study. Uncomplicated gastric ulcers were not included and digestive hemorrhages caused by gastritis were excluded. The study was monocentric, and non-randomized. No payment was made to participants. The parameters studied were collected on a pre-established written questionnaire that was filled out in the emergency room when cases were admitted. The questionnaire included age, gender; history including smoking, alcoholism, corticosteroid therapy, long-term NSAID or anticoagulant use. A previously diagnosed ulcer was also looked for along with the treatment and its adherence and efficacy. A known *Helicobacter pylori* infection was also routinely investigated. The various means of investigation were collected as well as the diagnosis retained (digestive hemorrhage, gastric perforation, pyloric stenosis, gastric cancer). The medical-surgical treatment was also explained in the study along with the evolution of the patients' condition. The evolution was followed in the surgical intensive care and visceral surgery departments to which the patients were transferred. The length of stay in the intensive care unit and the length of hospitalization were also evaluated. The data were analysed using Epi.info.

Results

The study involved a total of 96 patients. The median age was 48 years [18 years, 84 years], with a predominantly male sex ratio of 0.72. The median age was 48 years [18 years, 84 years]. Sixty-four percent of the patients were under 60 years of age. The ulcer was already known in 68.80% of the cases with a badly followed-up treatment in 6.9% due to lack of financial means, the treatment was at the patients' expense. Sixty-six upper endoscopic examinations could be carried out, with the following results

biopsy for Helicobacter pylori. Thirty-six digestive hemorrhages (37.5%) versus twenty-six gastric perforations (27.08%) had a personal history of gastric ulcer.

Digestive hemorrhage (n=52) followed by gastric perforation (n=36) represented the most common complications of MVC. Pyloric stenosis (n=16), and gastric cancers (n=16) were rarer. The association between toxic habits and the occurrence of complication were not significant because p was not less than 0.05 in our study (Table 1).

Table 1: Distribution of GAD complications according to toxic habits

Risk Factors	Gastric cancer	Digestive haemorrhage	Gastric perforation	Pyloric stenosis	Total

Tobacco					P=0,6882
Yes	-	18 (60%)	10 (33,33%)	2 (6,7%)	30 (100%)
No	4 (6,1%)	34 (51,5%)	26 (39 ,4%)	2 (3%)	66 (100%)
Alcohol P=0,1926					
Yes	-	38 (59,4%)	24 (37,5%)	2 (3,1%)	64 (100%)
No	4 (12,5%)	14 (43,8%)	12 (37,5%)	2 (6,3%)	32 (100%)
Decoction					P=0,192
6					
Yes	-	14 (43,8%)	18 (56,2%)	-	32 (100%)
No	4 (6,3%)	38 (59,4%)	18 (28,1%)	4 (6,3%)	64 (100%)
NSAIDS p=0,6918					
Yes	2 (8,3%)	12 (50%)	10 (41,7%)	-	24 (100%)
No	2 (2,8%)	40 (55,6%)	26 (36,1%)	4 (5,6%)	72 (100%)

Table 2: Breakdown by Hp infection and occurrence of gastrointestinal bleeding in UGDs

	Digestive hemorrhage		OR [$IC_{95\%}$]	p
	Yes N = 52 n (%)	No N = 44 n (%)		
Infection HP				
Yes	40 (76,92)	12 (27,27)	8,88 [2,40 – 32,90]	0,0003
No	12 (23,08)	32 (72,73)		

The association between *Helicobacter pylori* infection and digestive hemorrhages on UGDs was significant (Table 2).

The association between irregular meal, hot drinks, acidic diet, coffee was significant, whereas the chocolate and spice rich diet was not significantly associated with the occurrence of GI hemorrhage (Table 3).

Table 3: Diet Distribution and Occurrence of GI Hemorrhage in UGDs

	Digestive haemorrhage	OR [$IC_{95\%}$]	p

	Oui N = 52 n (%)	Non N = 44 n (%)				
Irregular meal						
Yes	42 (80,77)	8 (18,18)				
No	10 (19,23)	36 (81,82)	18,90 81,20]	[4,39	–	0,000008
Very hot drink						
Yes	30 (57,69)	10 (22,73)	4,63 16,42]	[1,30	–	0,008
No	22 (42,31)	34 (77,27)				
Coffee diet						
Yes	38 (73,08)	16 (36,36)	4,75 16,20]	[1,39	–	0,006
No	14 (26,92)	28 (63,64)				
Chocolate diet						
Yes	8 (15,38)	6 (13,64)	1,15 [0,22 – 5,80]			0,440
No	44 (84,62)	38 (86,36)				
Spice diet						
Yes	16 (30,77)	16 (36,36)	0,77 [0,23 – 2,59]			0,347
No	36 (69,23)	28 (63,64)				
Acid diet						
Yes	32 (61,54)	12 (27,27)	4,26 14,54]	[1,25	–	0,01
No	20 (38,46)	32 (72,73)				

The most common cause of discontinuation (n=10) was financial problems, as patients could not complete the protocol. Eighteen patients had a median resuscitation stay of 2.5 days with extremes of one to seven days. The mean length of hospital stay was 6.5 days +/- 3.5 days. Four

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patients had died due to severe GI bleeding, the rest of the patient progression in our study was favourable (n=92).

Discussion

In our study, the population was fasting, and more than half of them were under 60 years of age. In the study by Cook et al, on 2252 patients, 50% of whom were hospitalized in intensive care for cardiovascular disease or following cardiovascular surgery. There was no significant difference in age, gender, acute physiology and chronic health evaluation (APACHE) score between severe and non-severe hemorrhage. Patients ventilated for more than 48 hours and/or with coagulopathy were at high risk of severe hemorrhage (3.7%) compared to a low risk (0.1%) in patients with neither risk factor. Other independent risk factors for bleeding complications of a peptic ulcer are: the presence of sepsis, hepatocellular insufficiency, renal failure, and treatment with corticosteroids or non-steroidal anti-inflammatory drugs, cardiogenic or hypovolemic shock, sepsis, neurological coma, burn victims, polytrauma, and transplant patients. Seventy percent of ulcer-caused gastrointestinal bleeds dry up spontaneously under medical treatment or when associated factors (NSAIDs or aspirin) are removed. Stress is also recognized as a risk factor for peptic ulcer but rarely causes a complication. Acute stress ulcers may present as multiple petechial erosions and red or blackish endoscopic erosions. They first appear in the fundus and extend distally but always predominate in the fundus. Histologically, the erosions may be rarely visible due to rapid mucosal distribution and a very fine regenerative epithelium is then the only control.

In our results, gastric perforation was the second most common complication of the UGDs. by its frequency. In the literature, Perforation of a duodenal ulcer occurs in 5-10% of patients with chronic ulcer disease. The incidence of perforation is estimated at 7-10 cases / 100,000 adults, with a peak between 40 and 60 years of age. Perforation of a gastric ulcer may occur on a cancerous lesion [4]. According to the consensus for the management of peptic ulcers: The search for *Helicobacter pylori* antigen in the stool is sufficient for duodenal ulcers, but a biopsy should be performed if a gastric ulcer is found in the search *Helicobacter pylori* because there is a risk of degeneration although rare (less than 2%) [5]. There are gastric ulcers with neoplastic foci and sometimes even superficial cancers at a distance from a benign ulcer. A more or less extensive enterofundic gastritis, evolving towards glandular atrophy, constitutes a real pre-neoplastic lesion, indeed, it is from this atrophic gastritis that cancer can develop [5].

Failure to follow the instructions for performing endoscopy (stopping treatment for two weeks) may have reduced the sensitivity of this examination for the detection of Hp. The natural evolution of the ulcerous disease towards pyloric stenosis is increasingly rare nowadays thanks to the systematic introduction of medical treatment, but it is observed in cases of maltreated or untreated peptic ulcer [3]. In Madagascar, there is no national control programm but the protocol is based on a consensus based on multiple recommendations. Antibiotics as well as proton pump inhibitor may have a high cost which is not within the reach of all patients. This situation encourages poor adherence to treatment and the occurrence of complications. A change in diet is often recommended to avoid aggravation of a pre-existing ulcer. However, additional research is

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required to verify the validity of the study because of the potential for confounding bias in this association. There are not enough studies yet to evaluate the association between CGUs and chocolate. Coffee and alcohol increases acid production (RR=2) exacerbating the symptoms in an ulcer and can cause digestive hemorrhage by eroding the gastric mucosa like in our results [6]. A prospective cohort of 47806 men reported that a diet richer in vitamin A, fruits and vegetables was a protective factor. Studies conducted in China on green tea had shown that foods rich in flavonoids would inhibit the growth of *Helicobacter pylori*. The same goes for cranberry juice which would also reduce the growth of *Hp* [7]. This research is important because this diet can block the bacteria without destroying them, which would be an asset at the present time given the rise in resistance to the usual antibiotics of bacteria around the world [8].

Conclusion

The prevalence of *Helicobacter pylori* infection and poor adherence to therapy remain major problems, increasing patient morbidity and mortality.

Knowledge of the pathophysiology of ulcer disease and the eradication of Helicobacter pylori reduces the incidence of complications of peptic ulcer disease.

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