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Esophageal cancer in Bobo-Dioulasso (Burkina Faso): epidemiological, clinical, endoscopic and anatomopathological aspects

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ABSTRACT

Introduction. Our study aims to strengthen the literature on esophageal cancer in Burkina Faso by assessing its endoscopic frequency and describing its epidemiological, anatomical-clinical and endoscopic characteristics. **Patients and Methods:** This was a descriptive cross-sectional study conducted from January 1, 2015 to June 30, 2018. Included in this study were all patients who had upper gastrointestinal fibroscopy (UGIF) with biopsy, and in whom esophageal cancer was confirmed histologically. The variables studied were: age, sex, main circumstance of diagnosis, endoscopic appearance, and histological type, as well as risk factors. **Results:** During the study period, 29 cases of esophageal cancer were diagnosed, with an average endoscopic incidence of 8.3 cases/year. The average age was 58.34 years. There were 17 (58.6%) males, or a sex ratio of 1.5. The definite risk factors of alcohol consumption and active smoking were present in 31.0% of patients. The average duration of consultation was 65.8 days, and the main symptom at diagnosis was dysphagia (72.4%). The preferred location was the lower third for nearly three-quarters of tumors; and the budding form was dominant (56.3%). At histology, squamous cell carcinoma was the dominant type (65.5%). **Conclusion:** This study shows us an increase in the average annual incidence of esophageal cancer in Bobo-Dioulasso. It mainly affects males from the age of 50, with clinical, endoscopic and histological characteristics similar to those found in the literature. The great delay in diagnosis limits the therapeutic options for this cancer with a formidable prognosis.

Keywords: cancer, esophagus, epidemiology, endoscopy, histology, Bobo-Dioulasso.

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Introduction

Esophageal cancer is a primary malignant tumor, often diagnosed late and with a poor prognosis. It is a cancer whose epidemiology and risk factors are now well known in industrialized countries [1, 2].

Worldwide, esophageal cancer is reported to rank 8th among cancers in terms of frequency; and 6th in terms of mortality [3]. Its impact varies from region to region around the world. It is more common in developing countries; 80% of esophageal cancer cases worldwide are observed in these countries, particularly in China [3, 4, 5]. In Africa, there is a low incidence in West Africa, in contrast to a higher incidence in East Africa [3]. In Francophone Africa, its overall incidence was estimated at 2.2% in 2012 [6]. It is therefore a cancer that is not uncommon in Africa. It has thus been the subject of work by a number of authors throughout Africa, notably in Togo [7, 8], Mali [9], Senegal [10], Burundi [11], and Kenya [12].

In Burkina Faso, some work on tumors of the digestive tract has been carried out. Thus, Sawadogo et al [13] in Bobo-Dioulasso reported that esophageal cancer accounted for 12.3% of digestive tract cancers in their series. Ouagadougou, Kaboré [14] reported 8 cases of esophageal cancer in 5 years; while Soudré et al [15] reported an annual incidence of 2.95 cases for the same cancer. It is therefore a tumor whose real frequency remains unknown in our country in view of the above disparities from one study to another, and from one city to another.

Our study complements the existing literature on esophageal cancer in Burkina Faso. Its objectives are to evaluate the endoscopic frequency of esophageal cancer and to describe its epidemiological, clinical, endoscopic and anatomopathological aspects in Bobo-Dioulasso.

Patients and methods

Type of study, population and sampling

This was a descriptive cross-sectional study, covering the period from ¹ January 2015 to 30

June 2018. It concerned all patients who had undergone upper digestive fibroscopy (HDF) with biopsy, performed either in the digestive endoscopy unit of the Sourô Sanou University Hospital Center (SS- UHC) in Bobo-Dioulasso, or in the digestive endoscopy unit of a private structure in the said city, the "Clinique de l'Avenir". The histological examination of the endoscopic biopsy pieces was carried out at the pathological anatomy laboratories of the University Hospital Center of Bobo-Dioulasso, or at the SANDOF clinic in Ouagadougou.

Included in this study were all patients who had upper gastrointestinal fibroscopy (UGIF) with biopsy, and in whom esophageal cancer was confirmed histologically. Excluded from this work were all cases of endoscopic esophageal dysplasia whose malignancy has not been confirmed by histology.

Variables and data collection technique.

The variables studied were: patient age, sex, main clinical circumstance of diagnosis, time to visit, endoscopic appearance, histological type of cancer, and risk factors (alcohol use, smoking, consumption of hot food or fluids, gastroesophageal reflux disease). Before the endoscopic procedure, all patients were given a 2% viscous xylocaine local anesthetic beforehand. A video-endoscope with axial, multidirectional vision was used in both endoscopy units. These were the STORZ 13821 PKS brand at the SS-UHC, and the Fujinon EG 2500 brand for the private clinic. Biopsies (at least 5) were systematic on all aspects of esophageal dysplasia, as well as any other lesions considered suspicious with upper digestive fibroscopy. These biopsies concerned the lesions located in the upper, middle and lower third. They were immediately fixed at 10% Formaldehyde and sent to the above-mentioned laboratory. Lesions of the esophageal-cardial junction were excluded as part of the proximal stomach. Data were collected from reports of upper gastrointestinal fibroscopy (UGIF), and histological examination of biopsy specimens.

Data processing and analysis.

The data collected were entered and analyzed using SPSS version 20 (Statistical Package for the Social Sciences) software. Descriptive statistics were used to determine the frequencies, means and standard deviations of qualitative or quantitative variables. The mean annual gross endoscopic incidence of esophageal cancer was calculated in our series by dividing the total number of cases diagnosed during the study period by the duration of the study period, which was 3.5 years.

Results

During the study period, 4670 gastroscopies were performed, and 29 (0.62%) cases of esophageal cancer were diagnosed, representing an annual endoscopic frequency of 8.3 cases. The average age of the patients was 58.3 ± 15.7 years [26 years - 90 years]. The median age was 60 years. The male predominance was clear, with 12 women (41.4%) and 17 men (58.6%), with a sex ratio of 1.4.

Cancer was most commonly observed from the age of 60 (Table 1); and 72.4% (n = 21) of cases were at least 50 years old.

Table 1 : Distribution of the 29 patients with esophageal cancer by age group.

Age group	Number of cases	Percentage
≤ 39 years old	4	13,8
40 to 59] years old	8	27,6
≥ 60 years old	17	58,6
TOTAL	29	100

Professionally, they were mainly farmers (44.8%; n = 13), housewives (34.5%; n = 10), and retired people (6.9%; n = 2). The other occupational groups were represented by one case (3.4%) each: coalsmith, hairdresser, shopkeeper, student, and welder.

Clinically, the average time to visit was 65.8 ± 24 days with extremes of 15 to 122 days. This

period was 80.5 ± 41.5 days for dysphagia. The main clinical diagnostic circumstances dominated by dysphagia (69%), and epigastralgia (18.75%). Altered general condition was present in 68.75% (n =20) of patients. Table2 gives a breakdown of the different clinical circumstances of endoscopic discovery of esophageal cancer in our series.

Table2: Main clinical circumstances for the diagnosis of esophageal cancer in Bobo-Dioulasso.

Symptom	Frequency	Percentage (%)
Dysphagia	21	72,41
Epigastralgia	6	20,69
Digestive hemorrhage	1	3,45
Chronic anemia	1	3,45

As for the risk factors for esophageal cancer, they were most often associated with the same patient. Regular beer alcohol consumption,

averaging 64.43 grams/day, was observed in five patients. A notion of smoking was present in three patients, with an average smoked tobacco

consumption of 37.17 pack-years. It should be noted that none of our patients were both alcohol and tobacco users. Table3. gives the distribution

of the different risk factors encountered in our series by gender.

Table3: Distribution of the different risk factors for esophageal cancer observed in our patients by gender.

Risk factors	Men	Women	Total	Percentage
	N	n	n	%
Alcohol	5	01	6	20,69
Tobacco	3	00	3	10,34
High-risk occupation (coalmining, welding)	2	00	2	6,90
Ingestion of hot products (tea, infusions)	6	2	8	27,59
Hot meals	8	5	13	44,83
History of GERD*	3	4	7	24,14
No obvious factors	2	3	5	17,24

* Gastroesophageal reflux.

At endoscopy, the tumor was 55.17% (n = 16) in the lower third, 24.14% (n = 7) in the upper third and 20.69% (n = 6) in the middle third. These were mainly budding tumors (56.3%; n = 16), ulcer-budding tumors (40.6%; n = 12). One case of isolated infiltrating tumor was observed. Stenosis was associated with either of these forms in more than half (55.17%; n = 16) of the cases.

At histology, the predominant type was squamous cell carcinoma (65.52% ; n = 19), followed by adenocarcinoma (31.03% ; n = 9). One case (3.45%) of carcinoma in situ (CIS) located in the lower third was observed.

Discussion

The limits of our study

As the study was based on an endoscopic series, the results could not therefore claim to reflect the state of the general population. In addition, some data are missing from this study because only patient records that can cover the costs of an FDH and a histological examination

(absence of a third party payer) have been taken into account.

Nevertheless, despite these shortcomings, our results give us an insight into the current situation of esophageal cancer in Bobo-Dioulasso, Burkina Faso.

Frequency

The endoscopic prevalence rate of 0.6% for esophageal cancer is low in our study. In fact, in 3.5 years, 29 cases were diagnosed out of 4670 gastroscopies performed. Other previous studies conducted both in Bobo-Dioulasso and in other parts of the country had made the same observation, of this low frequency. Thus Sawadogo et al [13] in Bobo-Dioulasso, reported 16cases in 7 years (2.29 cases/year). In Ouagadougou, Kaboré [14], and Soudré [15] provided 8 cases in 5 years (1.6 cases/year) and 28 cases in 9.5 years (2.95 cases/year) respectively. Although rare, in Burkina Faso, there is a disparity in prevalence from one study to another, making it difficult to really estimate the incidence of this cancer in our country, where a cancer registry is almost non-existent. These

different results corroborate with data from the literature that reports a low prevalence of esophageal cancer in Africa, especially in its West Region [3]. Thus, Dia [10] in Senegal reported 76 cases in 5 years; Maïga [9] in Mali reported 16 cases in 2 years; while Bouglouga [8] in Togo reported 24 cases in 8 years. In contrast, the highest prevalences are observed mainly in East Africa, notably in Kenya [12] where 407 cases were reported in 5 years, and in Ethiopia where Mengesha [16] reported 27 cases in 12 months. Overall, esophageal cancer in Africa remains low in frequency compared to Western and East Asian countries [3-5]. The low rates reported in Africa, particularly south of the Sahara, can be explained by the fact that a large proportion of cases are under-diagnosed, due to insufficient or inaccessible adequate diagnostic resources; and by the absence of a cancer registry in many African countries, which hinders reliable data recording.

General characteristics of the sample

The data concerning the average age and proportion of patients over 50 years of age are identical to those reported by Soudré et al [15] in Ouagadougou, which found an average age of 58.63 years. Similar age averages are also reported by Johnston in Kenya [12], and by Peghini in Madagascar [17]. On the other hand, other authors have reported lower age averages than ours [10, 11, 13]. The male prevalence of esophageal cancer described in the literature [3-5], is also observed in our series with a *sex ratio* of 1.4. Most African authors [7, 11-13, 17] make this same observation; in contrast to Maïga et al [9] in Mali, who reported a female predominance with a sex ratio of 0.5. Moreover, Bouglouga [8] in Togo, and Thiam [18] in Senegal reported a sex ratio of 1. This male predominance of esophageal cancer is explained by a male genetic and physiological susceptibility [4], and by their high exposure to risk factors including alcohol and tobacco. Indeed, 47.1% (8/17) of men were exposed to one of these two factors, compared to 8.33% (1/12) of women in our series. These two substances are indexed in the

literature [1, 2] as the main risk factors for esophageal cancer, including squamous cell carcinoma. Other risk factors cannot be exempted in our study, as only 31% of our sample was affected by alcohol or tobacco use. Thus, the dietary factor could be involved in the occurrence of this cancer in our context. Indeed, the frequency of food deficiencies in our populations, combined with the low consumption of fruit and vegetables (protective factors), contribute to increasing the risk of cancer and in particular that of the esophagus [19]. Similarly, the regular consumption of cereals, particularly corn flour by our patients, is described in the literature as a risk factor [4, 20]. The same is true dietary attitudes such as the consumption of food or hot liquids observed in 72.42% of patients in our series [4, 5]. Indeed, regular consumption of meals or hot liquids would cause chronic irritation of the squamous epithelium of the esophagus, and then lead to the appearance of epithelial dysplasia [5]. As for the cases of adenocarcinoma observed, it could be explained by the degeneration of possible endobrachy-esophagi, which complicated episodes of gastroesophageal reflux disease [5]. Its relative frequency has increased significantly over the past decades, particularly in France where it accounts for 50% of esophageal cancers [4,5] compared to 31.03% in our series.

Clinical aspects

The long average consultation time reported in our series is similar to that of Bouglouga et al [8], in Togo, which was 78.35 days. Dia et al [10] in Senegal reported an average consultation time of 3 months for dysphagia, which is close to the 80.5 days we observed for this symptom. These long delays in consultation can be explained, on the one hand, by a referral of patients to inappropriate services, the lack of gastroenterology specialists and, on the other hand, the use of traditional medicine or therapeutic alternatives, which remains the first recourse of the majority of patients before the modern hospital in our context. Dysphagia reported by different authors [7, 8, 10, 11, 14-16]

as the main call sign of esophageal cancer was also reported in our series. The delay in consulting a diagnosis for early management explains the discovery at locally advanced stages. These stenosing tumors promote rapid alteration of the general state of health, which is the usual circumstance for the discovery of these lesions in our context.

Endoscopic aspects

In the literature, esophageal cancer often occurs in the lower third [4, 5]. This observation is also made in our series for 55.17% of cases, and by many other African authors [11, 17, 18] who have made the same observation. The increasing incidence of degenerative forms of endobrachy-esophagus may be one explanation. On the other hand, Bouglouga et al [8] in Togo, Dia et al [10] in Senegal, reported a predominance of location in the middle third. These budding (56.3%) and ulcer-budding (40.6%) tumors were predominant in our series. These two macroscopic aspects are the most reported by the different authors [7, 8, 15, 18]; in varying proportions from one study to another. These differences in the description of the macroscopic aspect would be partly dependent on the operator's experience.

Anatomical and pathological aspects

A predominance of squamous cell carcinoma was observed in our series with 65.52% of cases. Squamous cell cancer of the esophagus is the most common histological type in the literature. In Burkina [13, 15], as in other countries on the continent [8, 10, 17, 18], this histological type is still frequent, probably because of the risk factors of alcohol and tobacco being real scourges. In addition, the 31.03% of adenocarcinoma that we reported would be related to the complications of possible episodes of gastroesophageal reflux disease, as pointed out by Dia [21] in Dakar, Senegal. It should be noted that adenocarcinoma has seen its incidence increase, and is in the process of becoming the most frequent type in the West, particularly in France [4].

Conclusion

This study shows us an increase in the average annual incidence of esophageal cancer in Bobo-Dioulasso. It mainly affects males from the age of 50, with clinical, endoscopic and histological characteristics similar to those found in the literature. The great delay in diagnosis limits the therapeutic options for this cancer with a formidable prognosis.

Conflict of interest: the authors declare that they have no conflict of interest.

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