

# Larynx Cancer: Review of 11 Years of Activity in the ENT and Head and Neck Surgery Department of University Hospital Gabriel Toure, Bamako

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## Abstract

**Objectives:** To study the epidemio-clinical, therapeutic and evolutionary aspects of laryngeal cancers in the ENT department of the University Hospital Gabriel Toure. **Materials and Methods:** This was a descriptive, retrospective study over a period of 11 years from January 2008 to December 2019. We made an exhaustive sampling of all cases of malignant tumors of the larynx in the ENT department of the University Hospital Gabriel TOURE. Variables studied: frequency, sex, age, clinic, imaging, histology, TNM classification, treatment received and follow-up time was 1 to 11 years. **Result:** we noted a male predominance (44 men/13 women). The average age was 52.23 years, with extremes of 32 and 74 years. Smoking was reported by 40 patients (72% of cases). The average in pack-years is 29.32 with extremes of 4 to 60 packs/year. Alcoholism was reported by 6 patients (9% of cases). Squamous cell carcinoma was the predominant histological type (100%); extension to 2 or 3 floors was objectified in 69% of cases. Complementary radiotherapy in 26 patients after total laryngectomy. Chemotherapy was done in a neoadjuvant situation in 36 cases. Overall survival was: 52.6% at 1 year, 33.3% at 3 years; 26.3% at 5 years and 12.28% at 11 years. **Conclusion:** Most often, late diagnosis is due to the absence of a national strategy and the underestimation of the first symptoms. Surgery coupled with radiotherapy is the treatment of choice.

## Keywords

Laryngeal Cancer, Histology, Treatment, Follow-Up

## 1. Introduction

Laryngeal cancer represents 3.5% of malignant tumors diagnosed annually worldwide, causing 20,000 deaths corresponding to 1% of cancer deaths [1]. The number of new cases of laryngeal cancer in metropolitan France in 2018 is estimated at 3160, 87% of which were in men. World standardized incidence rates (TSM) are 4.8 cases per 100,000 person-years in men and 0.7 per 100,000 person-years in women (male/female ratio equal to 6.9) [2]. Its standardized net survival rate at 5 years: is 56% (56% in men and 59% in women) [3]. Medical imaging, in the particular scanner, MRI, PET, makes it possible to specify the site as well as the local and regional extension. [4]. squamous cell carcinoma is the most frequent histological type (95%) [4]. From 2008 to 2018 according to the Mali cancer registry report, laryngeal cancer was 1.3% in men, *i.e.*, 7 cases per year and 0.5% in women, *i.e.*, 4 cases per year of all cancers in Mali with an incidence of 0.8 per 100,000 inhabitants in men and 0.5 per 100,000 inhabitants in women [5]. Suppose laryngeal cancer is a ubiquitous pathology. There were no specific registers on this subject in the service. Thus the objective was to study the epidemio-clinical, therapeutic and evolutionary aspects of malignant laryngeal tumors in the ENT department of the University Hospital Gabriel Toure.

## 2. Materials and Methods

This was a descriptive, retrospective study over a period of 11 years from January 2008 to December 2019. We made an exhaustive sampling of all cases of malignant tumors of the larynx in the ENT department of the University Hospital Gabriel Toure.

### **Inclusion criteria:**

Records of patients, men and women of all ages seen and treated for laryngeal cancer in the ENT department of the Gabriel Toure hospital in Bamako.

### **Non-inclusion criteria:**

Incomplete files, patients who have refused any therapeutic acts, any patient treated outside the said interval and who does not present any histological evidence.

Sampling: The sampling was exhaustive and we obtained 57 cases during the study period.

### **Variables studied:**

Frequency, sex, age, socio-economic status, geographical origin, lifestyle (alcohol-tobacco intoxication), consultation time, signs, site of lesion, pharyngolaryngeal CT scan, Frontal chest X-ray, Abdominal ultrasound, macroscopic aspect of the lesion, pan endoscopy, histology, TNM classification, treatment received.

Follow-up time: it was 1 to 11 years.

### **Ethical and administrative considerations:**

This is a purely scientific work that aims to improve the care of patients with laryngeal cancer. Anonymity was strictly respected. The results will be used to

improve the quality of laryngeal cancer management. The consent of the patients or their relatives (accompanying) was obtained beforehand.

### 3. Results

We collected 57 cases of laryngeal cancer over a period of 11 years and it represented 2.15% of ENT hospitalizations, *i.e.*, an annual frequency of about 6 cases (**Table 1**). A clear male predominance was highlighted (44 men/13 women). The average age for all sexes combined was 52.23 years with extremes of 32 and 74 years (**Table 2**). Smoking was reported by 40 patients (72% of cases). The average in pack-years is 29.32 with extremes of 4 to 60 pack-years. Alcoholism was reported by 6 patients (9% of cases). In our series, 17 patients had a medical history (30%). Thus 4 of our patients had a history of treated pulmonary tuberculosis, 2 cases of type diabetes, two patients had GERD and 2 two patients were carriers of heart disease. The time between the start of the symptoms and the consultation was on average about 18.5 months with extremes ranging from 3 to 52 months, and 65% of our patients only consulted after a delay of 8 months and more. Dysphonia was the main symptom in 100% of cases, whether or not associated with dyspnea (89%), dysphagia (67%), and cervical lymphadenopathy (56%). There was an invasion of the three laryngeal stages at the time of diagnosis in 37% of cases. Glottic involvement in 4% of cases, glotto-supraglottic involvement in 32% of cases, and glotto-subglottic involvement in 28% of cases (**Table 3**).

The pharyngolaryngeal computed tomography was performed in all our patients and made it possible to better specify the extension towards the regions difficult to exploit by endoscopy, to classify the tumor and also to evaluate the

**Table 1.** Distribution of patients by year of recruitment.

Year of recruitment	Effective	Percentage
2008	2	3.6
2009	1	1.8
2010	3	5.3
2011	3	5.3
2012	4	7.0
2013	4	7.0
2014	5	8.8
2015	4	7.0
2016	7	12.3
2017	9	15.8
2018	10	17.5
2019	5	8.8
total	57	100

**Table 2.** Distribution of patients by age group.

Age range	Effective	Percentage (%)
[30 - 40 years old]	2	3
[41- 50 years old]	6	11
[51- 60 years old]	27	47
[61 - 70 years old]	17	30
[71 years older]	5	9
TOTAL	57	100

**Table 3.** Distribution of patients according to tumor site.

Tumor location	Effective	Percentage (%)
Glottic stage	2	4
Glotto-sus-glottic stage	18	32
Glotto-subglottic stage	16	28
<b>Larynx Totals</b>	<b>21</b>	<b>37</b>
TOTAL	57	100

lymph node involvement, and was associated with the exploration of the thoracic floor in almost all patients. It found an invasion of the HTE lodge in 9 patients, the paralaryngeal fatty spaces in 17 patients, the piriform sinus in 8 patients, and the aryepiglottic folds were affected in 15 patients. Squamous cell carcinoma is the predominant histological type (100%), and extension to 2 or 3 floors was objectified in 69% of cases. Regarding lymph node extension, we noted a single ipsilateral lymph node less than or equal to 3 cm (N1) in 44% of cases and a single ipsilateral lymph node involvement between 3 and 6 cm (N2a) in 10% of cases. 14% of patients had multiple ipsilateral lymph node metastases all less than or equal to 6 cm (stage N2b), and 11% of patients had bilateral or contralateral lymph node metastases less than or equal to 6 cm (stage N2c). Lymph node involvement greater than 6 cm (N3) was found in only 5% of cases. At the end of the TNM classification, 53% of our patients, *i.e.*, 30 cases, had stage IV cancer, 2 cases of stage I cancer, *i.e.*, 3% of cases, 8 cases of stage II cancer, *i.e.*, 14% of cases and 17 cases of cancer, stage III, *i.e.*, 30% of cases (**Table 4**). In our series, 26 patients underwent surgical treatment (46% of cases). Total laryngectomy associated with lymph node dissection was the only procedure performed for all patients treated surgically. Of which one (1) with associated thyroidectomy saw the invasion of the thyroid lobes and were referred for additional radiotherapy. Of all the patients treated with radiotherapy, whether in an adjuvant or exclusive external situation: 62% (either 23 cases) received a radio-chemotherapy combination with weekly cisplatin at a dose of 40 mg/m<sup>2</sup>. It should be noted that 48% received radiotherapy alone. The most widely used radiotherapy protocol (in all patients) is as follows: 70 Gy/total dose: at a dose of

**Table 4.** Distribution of patients according to stage T.

Location	Effective	Percentage (%)
Stage T1	2	3
Stage T2	8	14
Stage T3	17	30
Stage T4	30	53

**Table 5.** Distribution of patients according to overall survival rate after treatment.

Overall survival	Effectives	Percentage
At 1 year	30	52.6
At 3 years old	19	33.3
At 5 years old	15	26.3
At 11 years old	7	12.2

70 Gy due to 5 sessions of 2 Gy per fraction per week. Chemotherapy was done in a neoadjuvant situation in 36 cases and the chemotherapy protocol that was most used in 32 cases was carboplatin and CDDP paclitaxel 300 mg every 21 days. Concomitant chemotherapy was performed in 23 cases, with weekly cisplatin in all cases. Palliative chemotherapy was performed in two (2) metastatic patients based on 5fluorouracil-cisplatin.

At the end of the treatments received by our patients and after follow-up, we noted 7 cases of local recurrence, 3 cases of lymph node recurrence, 1 case of metastatic recurrence (pulmonary metastasis. In our series, the overall survival of the disease was 26.31% at 5 years (**Table 5**).

## 4. Discussion and Comment

### 4.1. Methodological Aspect

Our study, which focused on the retrospective analysis of hospitalization records, was confronted with certain number of difficulties:

- Inaccessibility of patients to imaging and to certain biological analyses, the repetition of which was part of the therapeutic follow-up of patients.
- Poor archiving of files.
- The loading of contact of certain patients.

### 4.2. Hospital Frequency Aspect

We collected 57 cases of laryngeal cancer over a period of 11 years and it represented 2.15% of ENT hospitalizations, *i.e.*, an annual frequency of about 6 cases. In our series, the incidence of laryngeal cancer was 0.8 per 100,000 inhabitants in men and 0.5 per 100,000 inhabitants in women. Our results are lower than those of Miss Mohssin Asmae [6], who found 2.4 per 100,000 inhabitants for men and 0.4 per 100,000 inhabitants for women according to the Grand Casablanca cancer registry and according to Clément Gauche [7] in France, the in-

idence was 2.5 per 100,000 inhabitants in men and 0.2 in women. This could be explained by the difficulties of access to care in our context, and the growing increase in industrial settings in developed countries, but tobacco and alcohol remain clear contributing factors [4].

### 4.3. Age

The predilection age for laryngeal cancer is between 45 and 70 years old with a clear predominance between the fifth and sixth decades of life, whereas it is uncommon before 45 and after 70 years [8], but we observe a recrudescence of cancer in younger and younger subjects in connection with the precocity of alcohol and tobacco intoxication, as is the case in our series. The average age varies according to the series but remains between 55 and 65 years old. In our study, the average age was 52 with extremes ranging from 32 to 74, which agrees with the results found in the series but remains relatively younger [8].

### 4.4. Risk Factors

In our study, forty of our patients are chronic smokers, *i.e.*, 70%. In the other non-smoking patients, the notion of passive smoking was clarified in two of our patients. Indeed, the risk is 2 to 12 times higher in smokers compared to non-smokers [9] [10]. Thus, Mrs. Madrare Lamyae [11] found that 85.3% of smokers in a series of 34 cancer cases with an average consumption of 10 to 50 packets per year. Sadek Houda [12] highlighted in his series of 100 cases, 86 chronic smokers, (86%), with an average consumption exceeding 4 to 100 packets per year. The alcohol-tobacco association was found in 10 of our patients, 5 patients consumed it occasionally. In our series, 17.53% consumed alcohol frequently or occasionally. Determining the quantity in our context is difficult. Indeed, when we push the questioning with the patients about their toxic habits, they generally tend to deny their alcoholic habits, unlike smoking, which explains the low percentage of alcoholism in our study.

### 4.5. Clinical Aspect

The consultation period is generally short in developed countries compared to Third World countries or the period can be spread over several years, as follows: we observed in our series an average period of 8.54 months with extremes ranging from 3 to 52 months. Our results are consistent with those of the literature [13], whose average consultation time was 8 months with extremes ranging from one month to 24 months. Several reasons could explain this late delay: The trivialization of certain symptoms (dysphonia, dysphagia) despite their persistence, the absence of initial pain and the difficulty of access to care. The delay in consultation can also be attributed to the first recourse to traditional medicine and the distance from specialized services. Finally, there is the diagnostic delay, which represents the time between the consultation of an ENT specialist and the histological establishment of the diagnosis, as well as the delay in the initiation of treatment. This delay is very long, allowing the evolution and the extension of

the tumoral lesions.

The clinical signs evoking laryngeal cancer are classically dysphonia, dysphagia and dyspnea. The clinical signs already mentioned can be supplemented by a dry, irritating but persistent cough, a sensation of a foreign body, reflex otalgia on the side of the tumor lesion, which was found in only one of our patients, more rarely, hemoptoic sputum attracts attention and will lead to consultation [1]. Thus the data on symptoms in national and international series, thus showing a good correlation with the data of our series.

#### **4.6. Imaging Aspect**

Imaging mainly provides additional information to endoscopy on deep extension. In our series, chest X-ray, abdominal ultrasound and cervico-thoracic CT were systematically used as staging assessments; but CT plays a key role in monitoring treated patients, detecting possible complications of treatment and looking for signs of recurrence (appearance of a mass, thickening of lymphadenopathy, etc.). In the literature [1] [8] in addition to the examinations aroused cervical MRI and PET-scan seem to be more specific and more sensitive to the search for metastasis. These extension assessments are not available from us, but cervico-thoracic CT remains the most useful examination to complete the extension assessment in all series.

#### **4.7. Histological Appearance**

Squamous cell carcinoma represents the dominant histological form of malignant tumors of the larynx. This is found in all the series reported in the literature. Diakité [13] in his series of 404 patients, found only one case of adenoid cystic carcinoma; squamous cell carcinoma was found in all the other patients. In our series, squamous cell carcinoma was found in 100% of cases, which agrees with most of the results reported in the literature. The well to moderately differentiated form represented 96%, and the poorly differentiated aspect constituted 4%.

#### **4.8. Therapeutic Aspects**

Three methods are available: surgery externally or by endoscopy, radiotherapy and chemotherapy. Total laryngectomy (TL) is indicated when the local extension of the primary tumor contraindicates the performance of a functional partial laryngectomy. Indicated for laryngeal carcinomas with cartilaginous and/or subglottic extension with involvement of the cricoid [1]. In our study, we used LT in 26 patients (46%). The performance of partial surgery stems from the wish of some patients who consent to the resection of part of their larynx, provided that swallowing, breathing and phonation are safeguarded [1] [14]. We did not have recourse since all our patients consulted at a late stage of the disease. The initial lymph node status of patients with squamous cell carcinoma of the upper aerodigestive tract is a factor influencing the prognosis. Patients without lymph node involvement have a favorable prognosis, whereas metastatic lymph node

dissemination clearly reduces survival. In our series, 84% of patients had cervical lymph node metastases at the time of diagnosis. After a total laryngectomy, radiotherapy is delivered by two opposite and parallel fields on the tumor excision area and the cervical lymph node areas.

It takes into account the histopathological criteria of the surgical specimen: analysis of resections of the tumor resection area, number of metastatic adenopathies and their capsular rupture, carcinomatous lymphangitis and emboli [1] [14]. In our work, radiotherapy was performed in 37 patients (65% of cases): adjuvant radiotherapy in 12 cases, and exclusive external radiotherapy in 25 cases. Of all the patients treated with radiotherapy, 62% (23 cases) received a combination radio-chemotherapy with weekly cisplatin at a dose of 40 mg/m<sup>2</sup> and 48% received radiotherapy alone.

Chemotherapy: Considered for a long time as a treatment for recurrent and/or metastatic tumors, it made a strong entry into curative treatments with the appearance, at the end of the 1970s, of platinum salts and their association with 5-fluorouracil. In ENT oncology, systemic treatment now has a validated place in the therapeutic arsenal. Use in induction prior to locoregional treatments with the objective of organ preservation. It was done in 48 patients in our study (84.21%).

#### **4.9. Prognostic Aspect**

In the literature, the overall survival rate (all sexes combined) at 5 years varies between 66 and 87% [1] [2] [14] depending on the tumor location, the therapeutic approach, the stage T, N and M and associated comorbidities. The overall prognosis is the best of that of the various tumors of the upper aerodigestive tract [1] [14]. In our series, the 5-year survival was 26.3%; this result is significantly lower than those of the international series. This low rate could be explained not only by the delay in diagnosis but also by the difficult access to postoperative radio-chemotherapy.

#### **5. Conclusions**

Laryngeal cancer is a heavy pathology, whether by its repercussions or by its management. The absence of a national strategy concerning this pathology and the underestimation of the first symptoms very often lead to the diagnosis being made at a late stage, which explains the absence of superficial cancers in our series. This same diagnostic delay is also weighed down by a long therapeutic delay due to the large influx of patients to the only radiotherapy and medical oncology department in the country.

The prognosis of laryngeal cancer remains lower in our series compared to international data. Finally, the fight against alcohol and tobacco intoxication remains the best way to reduce its incidence.

#### **Conflicts of Interest**

The authors declare no conflict of interest.

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