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Study of Risk Factors for Nasopharyngeal Carcinoma: About 214 Cases

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Abstract **Original Research Article**

Nasopharyngeal carcinoma (NPC) is a malignant tumour of the nasopharyngeal epithelium. It is very aggressive; with geographical distribution, placing Morocco in an intermediate incidence zone; and multifactorial etiology. We report here 214 cases of NPC followed within the Radiation Oncology Department of the Mohammed VI University Hospital in Marrakech, 84.58% of whom presented with at least one risk factor. The most incriminated was ENT infection (41.12%). NPC, due to its characteristics, constitutes a public health problem that requires primary prevention. Knowledge of risk factors would make it easier to raise public awareness.

Keywords: Carcinoma, nasopharyngeal, risk factor, prevention.

INTRODUCTION

Nasopharyngeal carcinoma (NPC) is a highly aggressive malignant tumour of the head and neck arising from the epithelium of the nasopharynx. Morocco, like other North African countries, is located in a NPC endemic zone with an incidence considered intermediate by the WHO [1].

The etiology of NPC is unique and multifactorial, involving a complex interplay between Epstein-Barr virus (EBV) infection and environmental, genetic and epigenetic factors [2-5]. It constitutes a public health problem given its therapeutic and evolutionary impact, despite its chemo-radiosensitivity [3]. It presents diagnostic difficulties, due to borrowing clinical symptoms [6].

The aim of our study was to describe the main risk factors for nasopharyngeal carcinoma in and around Marrakech, with a view to primary prevention of the disease.

MATERIALS AND METHODS

Our work is a retrospective descriptive analytical study bringing together 214 cases of NPC over a period of 5 years from January 1, 2018 to December 31, 2022 within the Department of Oncology-radiotherapy of the Mohammed VI University Hospital in Marrakech.

We included in this study all patients with PNC followed up in the Department during our study period and whose medical records were complete.

All the information available on the medical files was collected and analysed using a pre-established data sheet. The quantitative variables were analyzed using averages and the qualitative variables were expressed in numbers and percentages. These data were entered and coded using MICROSOFT Excel. Statistical analysis was carried out using processing software (SPSS version 23.0).

RESULTS

During our study period, 214 patients were treated for NPC, with an average age of 44.23 years ranging from 17 to 83 years, the most affected age group was between 41 and 50 years and the sex ratio was 3.21.

As the diagnosis was often late, patients consulted more frequently for lymph node syndrome (88.78% - 190/214). UCNT was the predominant histological type in 92.52% (198/214). The median duration of follow-up in our series was 24 months.

57.48% (123/214) of patients presented a single risk factor; 21.96% (47/214), two risk factors; 5.14% (11/214), three risk factors; 84.58% (181/214) presented at least one risk factor and 15.42% (33/214) presented none. 0.93% (2/214) presented a family history.

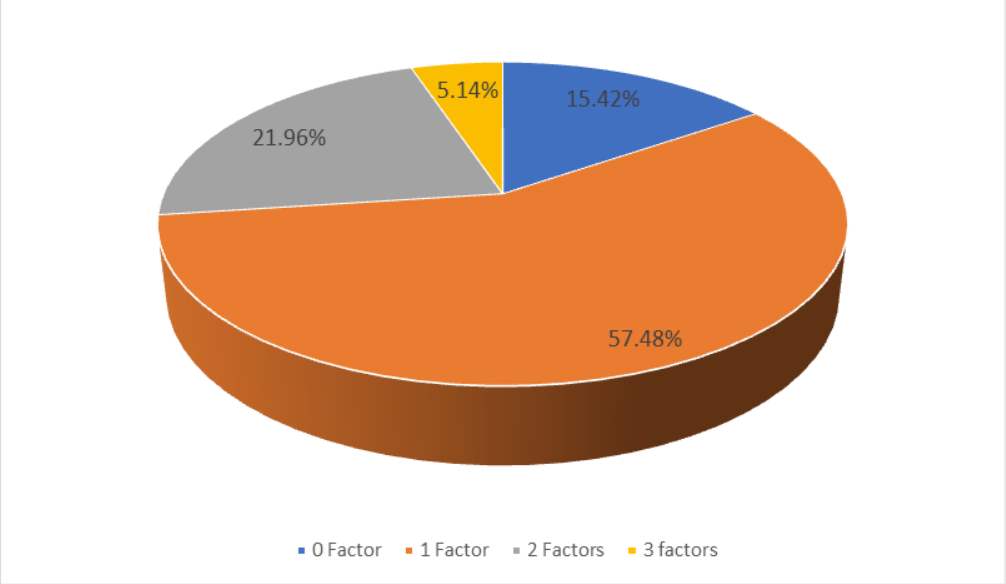

Figure 1: Number of risk factors per patient

The most incriminated risk factor was ENT infection (41.12% - 88/214), followed by tobacco (23.83% - 51/214), smoking and curing (21.49% - 46/214), wood dust (7.94% - 17/214) and alcohol (4.20% - 9/214).

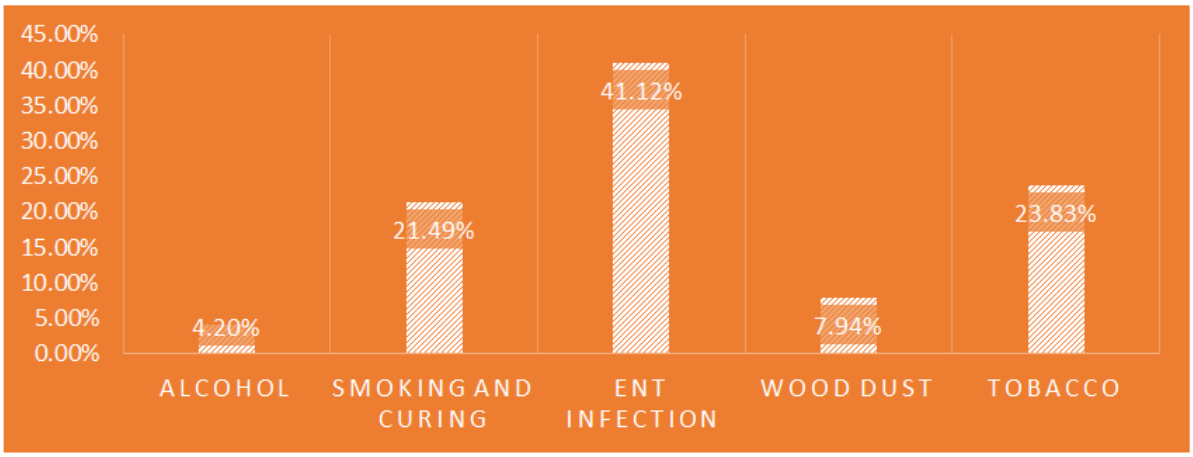

Figure 2: Distribution of risk factors

DISCUSSION

NPC is a multifactorial disease: genetic, familial and environmental factors (eating habits, toxic habits, occupational exposure and viruses).

Genetically, studies have suggested that the A2Bw46 profile appears to be involved at a relative risk of 2.3 in subjects over 30, and the Aw19B17 profile at a relative risk of 6.3 in those under 30. years [7, 8].

Familial aggregation of NPC has been widely documented in populations from endemic areas. These may result from common genetic susceptibility, common environmental risk factors, or both.

In southern China, complex segregation analysis of familial NPC shows that multiple genetic and environmental factors explain more of the observed pattern of inheritance, rather than a single major susceptibility gene [9]. In epidemiological studies, the risk was generally 4 to 10 times higher in people with a first-degree relative with NPC, compared to those without a family history [10]. In our study, 0.93% (2/214) had a family history.

Several studies have shown the role of diet in the genesis of NPC. These include foods containing dimethyl-nitrosamines such as salted and dried fish consumed by Southern Chinese [11]. On the other hand, in the Maghreb countries, we can cite the consumption of dried animal fat as well as dried and preserved meat: Kaddid [12].

In our study, smoking and curing accounted for 21.49% of the risk factors identified, close to Ben Lafqih (20%) [13] while moving away from Xiuchuan Guo *et al*., (98%) [14], which would seem to be due to the different eating habits in China and Morocco.

As for occupational exposures, a meta-analysis of more than 30 epidemiological studies demonstrated that exposure to formaldehyde was associated with NPC. Since 1995, formaldehyde has been considered a possible etiological factor of NPC by IARC [15].

Farmers have a high risk of developing NPC [16, 17], due to exposure to dust, fertilizers, pesticides, insecticides and herbicides.

In our study, wood dust represented 7.94%, far from Ben Lafqih 's study, (26.67%) [13], the profile of the study population (young) would justify this difference.

The role of tobacco-alcohol remains controversial, although alcohol and tobacco intoxication is implicated in the genesis of well-differentiated squamous cell carcinoma [18], there is no relationship between alcohol-tobacco intoxication and PNC according to several studies.

Alcohol represented, in our series, 4.20% of the risk factors, similar to the studies of Benzeid *et al*., (6.20%) [19] and Ben Lafqih (5.33%) [13] but far from those of Gihbid *et al*., (12.50%) [20], Bouikhsaine (21.05%) [21] and Baala (21.63%) [22], this would be justified by the restrictions on the consumption of alcohol in the region.

Tobacco presented 23.83% in our study, similar to the Gihbid *et al*., study (19%) [20], while moving away from that of Baala (51.35%) [22], which may be due to the profile of the latter's study population.

Two types of viral infections are linked to an increased risk of ENT cancer: EBV and certain Papillomaviruses. Epstein Barr virus is one of the most important etiological factors, its role in the pathogenesis of NPC has been confirmed by several studies [23, 24]. In our study, EBV serology was not done.

In our study, ENT infections represented 41.12.03%, closer to Ben Lafqih, 32% [13], and far from the studies by Bouikhsaine (8.77%) [21], by Baala (8.1%) [22], by Xiuchuan Guo *et al*., (96.30%) [14]. This could be due either to the social level of the populations studied, or to the Covid period.

We note that our results are similar to certain Moroccan studies and diverge from certain others. This would be justified by the profiles of the study populations and the geographical distribution closely linked to customs and habits.

CONCLUSION

NPC, a common cancer in the Maghreb region, represents a specific entity, with a poor prognosis, given diagnosis often at locally advanced or metastatic stages. Before arriving at this state of affairs, prevention is a necessity.

Knowledge of these risk factors directs us towards a global policy that can reduce the incidence of this disease, which is primary prevention, by establishing a policy of awareness and information for the population so that they actively participate in the latter.

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