

Nasopharynx

1. Introduction

1.1 General Information and Aetiology

The nasopharynx is the uppermost, nasal part of the pharynx. It extends from the base of the skull to the upper surface of the soft palate. It differs from the oral and laryngeal parts of the pharynx in that its cavity always remains patent (open). In front, it communicates through the conchae with the nasal cavities. On its lateral wall is the pharyngeal ostium of the Eustachian tube, behind the ostium is a deep recess, the fossa Rosenmüller. On the posterior wall is a prominence, best marked in childhood, produced by a mass of lymphoid tissue, known as the pharyngeal tonsil (Figure 1).

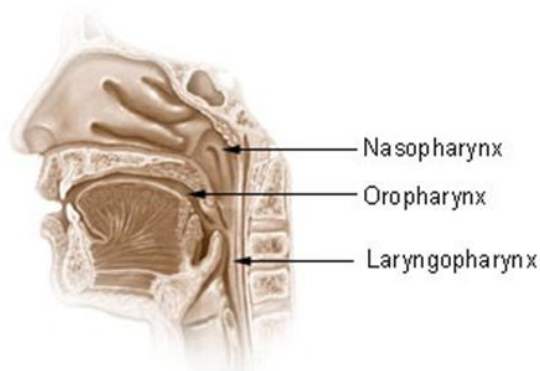


Figure 1. Location of the Nasopharynx

The Nasopharyngeal-Carcinoma (NPC) arises from the mucosal epithelium of the nasopharynx and is associated with an Epstein-Barr virus (EBV) infection [1]. EBV can infect epithelial cells and is associated with their transformation [1,2]. The EBV DNA levels in blood plasma also appear to correlate with treatment response and may predict disease recurrence [2]. The World Health Organization (WHO) classifies NPC in 3 different types: squamous cell carcinoma (I), keratinizing undifferentiated carcinoma (II) and non-keratinizing undifferentiated carcinoma (III) [3,4]. Type III is most common and strongly associated with EBV-infection of the cancerous cells. In adults, other likely etiological factors include genetic susceptibility and food-consumption (particular salted fish), containing carcinogenic volatile nitrosamines [5].

Nasopharyngeal cancers are rare in most parts of the world including the Flemish Region but have a higher incidence in certain other populations such as Chinese [5,6]. In high-risk groups, the incidence of NPC peaks at 40-60 years. Males are more frequently affected by this cancer than females.

1.2 Diagnosis and Treatment

The first procedure in the diagnosis is the anamnesis, followed by a clinical examination. Afterwards directed technical examinations are performed. Those may include MRI, CT, PET and (nasal) Endoscopy. The diagnosis is confirmed histologically on a biopsy specimen which is mostly taken during endoscopy [7].

The treatment of choice is radiotherapy, eventually in combination with chemotherapy, depending on the stage of the disease. This primary treatment can be followed by adjuvant chemotherapy [7,8]. In the past, induction chemotherapy was sometimes administered although recent data did not show any benefit [9]. In case of residual tumour in the neck after therapy, a neck dissection should be performed [8].

2. Data Selection

All nasopharyngeal cancers diagnosed between 2004 and 2007 for patients with an official residence in the Flemish Region are selected, resulting in 80 patients (for detailed information on the selected topography and morphology codes, see Appendix A). As described in Figure 2, 9 of them are excluded resulting in 71 patients for which results are presented in this chapter.

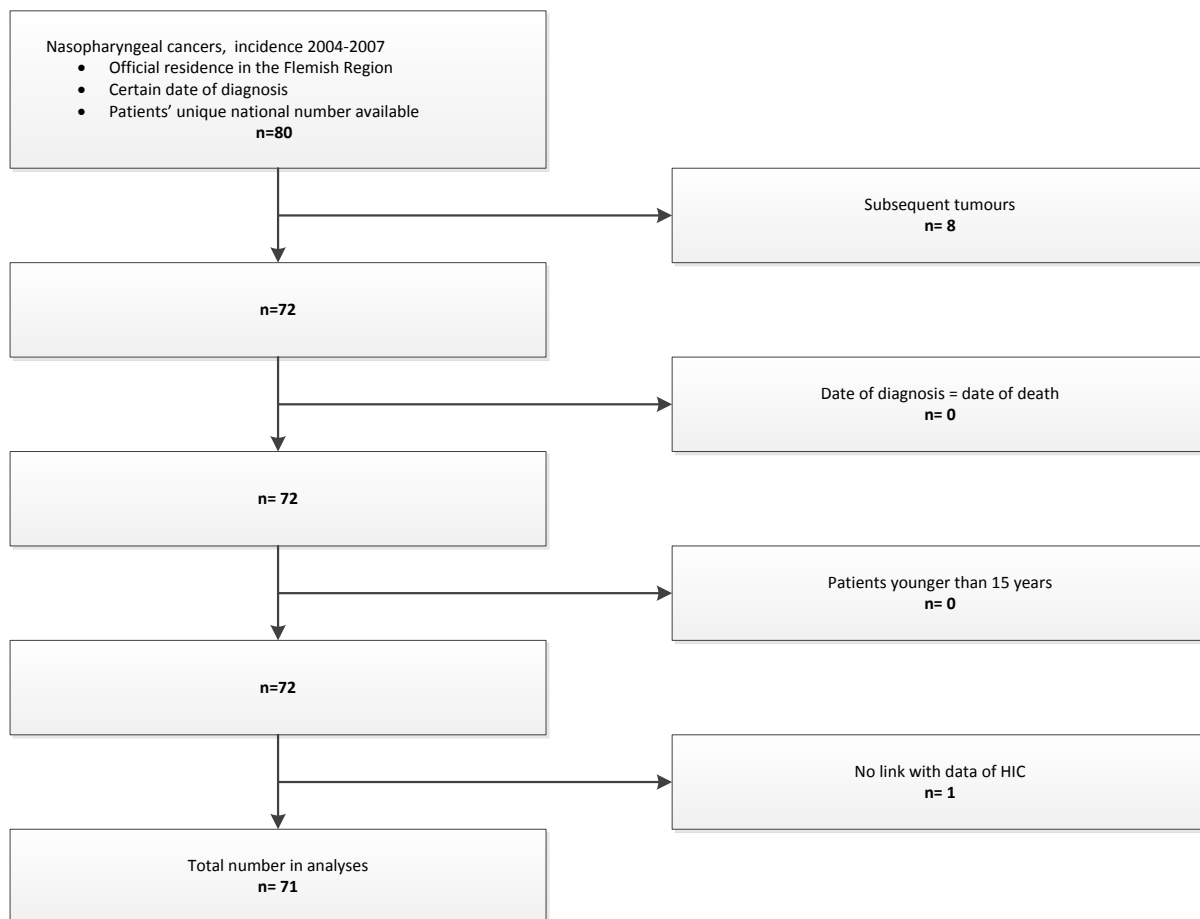


Figure 2. Selection of Nasopharyngeal Tumours (Flemish Region, 2004-2007)

3. Patient Characteristics

Nasopharyngeal cancer is very uncommon with only 71 patients diagnosed in the period 2004-2007 (Table 1), and females are less frequently affected than males (male/female ratio: 3.72). No clear trend in incidence rates is observed over the years.

The median age at diagnosis is 56 years for males and 57 years for females. The minimum age is 20 years while the maximum is 90. For further analyses, patients are divided into three age groups: 15-49 years, 50-64 years and 65+ years (Table 2).

Table 1. Nasopharyngeal Cancer: Incidence (Flemish Region, 2004-2007)

Incidence year	Males		Females		Total	
	n	ESR	n	ESR	n	ESR
2004	14	0.45	2	0.07	16	0.25
2005	11	0.33	2	0.05	13	0.18
2006	15	0.45	4	0.11	19	0.27
2007	15	0.43	8	0.20	23	0.31
2004-2007	55	0.41	16	0.11	71	0.25

ESR: age-standardised rate, using the European Standard Population (n/100,000 person years)

Table 2. Nasopharyngeal Cancer: Age distribution (Flemish Region, 2004-2007)

	Males	Females	Total
15-49 years	20	5	25
50-64 years	17	4	21
65+ years	18	7	25

4. Tumour Characteristics

Localisation, morphology, differentiation grade and staging of the selected nasopharyngeal tumours are presented in Table 3. As these tumours are only rarely treated by surgery, only combined stage is reported. Almost all tumours (94.4%) have an unspecified localisation. The majority of the tumours are classified as squamous cell carcinoma although about one fourth (26.8%) of the tumours are classified as lymphoepithelial carcinoma. Differentiation grade is unknown in 15.5% of the patients. Well differentiated tumours are rather uncommon, all other differentiation grades are regularly observed varying in proportion between 16.9% and 33.8%. Tumours are more often diagnosed in a more advanced stage III or IV.

Table 3. Nasopharyngeal Cancer: Tumour Characteristics (Flemish Region, 2004-2007)

	N	% of total	% of known
Localisation			
Superior wall of nasopharynx (C11.0)	1	1.4	33.3
Posterior wall of nasopharynx (C11.1)	2	2.8	66.7
Overlapping lesion of nasopharynx (C11.8)	1	1.4	/
Nasopharynx, unspecified (C11.9)	67	94.4	/
Morphology			
Squamous Cell Carcinoma	49	69.0	72.1
Lymphoepithelial Carcinoma	19	26.8	27.9
Other Defined Carcinoma	3	4.2	/
Differentiation grade			
Well differentiated	4	5.6	6.7
Moderately differentiated	12	16.9	20.0
Poorly differentiated	24	33.8	40.0
Undifferentiated	20	28.2	33.3
Unknown	11	15.5	/
Combined stage			
I	3	4.2	5.2
II	7	9.9	12.1
III	22	31.0	37.9
IV	26	36.6	44.8
Unknown	13	18.3	/

Stage IV tumours seem to occur more frequently in females, and in the middle age group (50-60 years) (Figure 3 and Figure 4). However, both results should be interpreted cautiously because of the low number of patients included in the analyses.

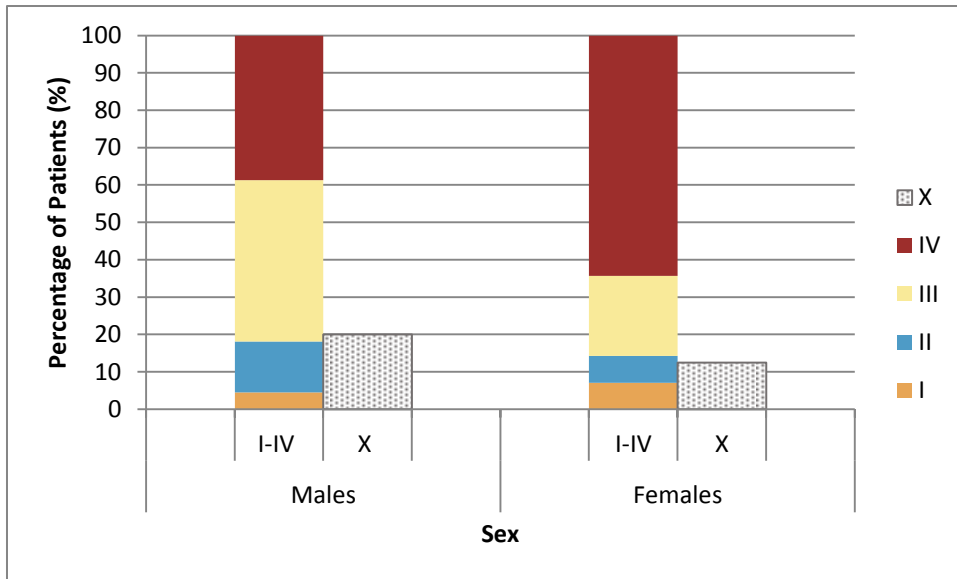


Figure 3. Nasopharyngeal cancer: Stage Distribution by Sex (Flemish Region, 2004-2007)

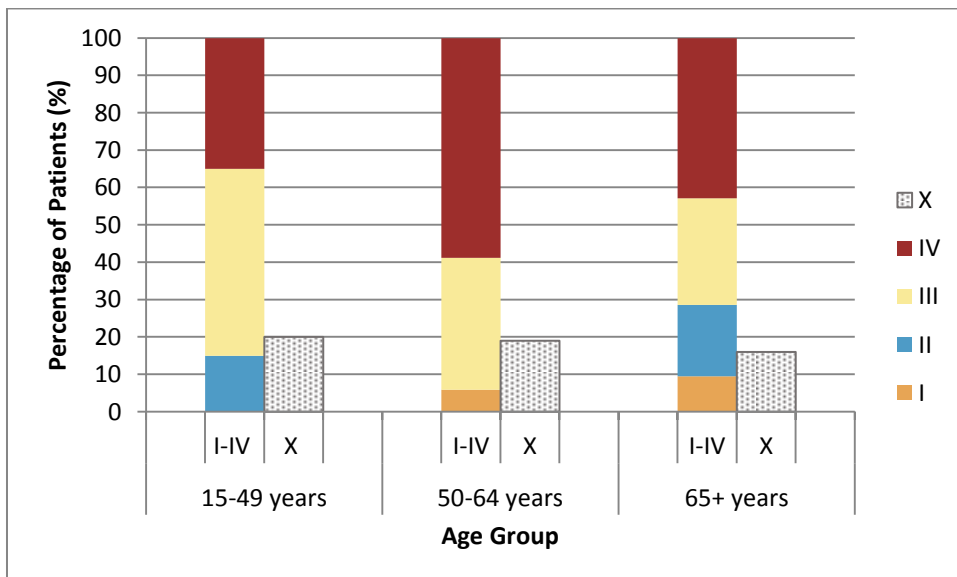


Figure 4. Nasopharyngeal Cancer: Stage Distribution by Age Group (Flemish Region, 2004-2007)

5. Diagnostic and Therapeutic Procedures

5.1 Diagnosis and Staging

An overview of the diagnostic and staging procedures for the nasopharyngeal cancers diagnosed in the Flemish Region between 2004 and 2007 is given in Table 4. Almost all cancers are confirmed by pathological examination (97.2%). A CT-scan is performed in all but 2 patients, MRI is done in 76% of the patients. An X-ray of the chest is charged to 80.3% of the patients. 59.2% of the patients have undergone PET-scanning.

Screening for second primary tumours in the respiratory or digestive tract is performed in 59.2% and 53.5% respectively. Biopsies of the lymph nodes seem to be uncommon.

Table 4. Nasopharyngeal Cancer: Overview of Diagnostic and Staging Procedures (Flemish Region, 2004-2007)

Diagnostic Procedure (-3m<inc<+3m)	Total (N=71)		2004 (N=16)		2005 (N=13)		2006 (N=19)		2007 (N=23)	
	n	%	n	%	n	%	n	%	n	%
Tissue Examination	69	97.2	15	93.8	13	100.0	19	100.0	22	95.7
Histological Diagnosis	68	95.8	15	93.8	12	92.3	19	100.0	22	95.7
Cytology	19	26.8	3	18.8	4	30.8	5	26.3	7	30.4
Imaging	69	97.2	15	93.8	13	100.0	19	100.0	22	95.7
Head X-ray	4	5.6	1	6.3	0	0.0	1	5.3	2	8.7
CT	69	97.2	15	93.8	13	100.0	19	100.0	22	95.7
MRI	54	76.1	12	75	9	69.2	15	78.9	18	78.3
Ultrasound Neck	21	29.6	4	25.0	3	23.1	7	36.8	7	30.4
PET Scan	42	59.2	6	37.5	6	46.2	17	89.5	13	56.5
Chest X-ray	57	80.3	14	87.5	10	76.9	15	78.9	18	78.3
Ultrasound Abdomen	29	40.8	9	56.3	4	30.8	6	31.6	10	43.5
Screening for Second Primary Malignancies	54	76.1	13	81.3	11	84.6	15	78.9	15	65.2
Respiratory Tract	42	59.2	9	56.3	7	53.8	13	68.4	13	56.5
Digestive Tract	38	53.5	10	62.5	10	76.9	7	36.8	11	47.8
Other Procedures										
Lymph Node Biopsy	11	15.5	4	25.0	2	15.4	2	10.5	3	13.0

5.2 Multidisciplinary Oncological Consult

About 66% of all nasopharyngeal cancer patients have been discussed at a multidisciplinary oncological consult (MOC) within one month before till three months after incidence date. The proportion of patients discussed at a MOC increases over the years from 56.3% to 73.9% (Table 5).

Table 5. Nasopharyngeal Cancer: Frequency of Multidisciplinary Oncological Consult (Flemish Region, 2004-2007)

Incidence year	MOC	
	n	%
2004 (n=16)	9	56.3
2005 (n=13)	7	53.8
2006 (n=19)	14	73.7
2007 (n=23)	17	73.9
Total (n=71)	47	66.2

5.3 Therapeutic Procedures

Most patients are primarily treated by radiotherapy (88.7%), which is most often preceded by chemotherapy (76.0%). Surgery for nasopharyngeal carcinoma is only charged in 4.2% of all patients. For an additional 4 patients, no primary treatment is registered.

Table 6. Nasopharyngeal Cancer: Overview of Treatment Schemes (Flemish Region, 2004-2007)

Treatment Scheme	n	%
Radiotherapy	63	88.7
Alone	9	12.7
Chemo < RT	39	54.9
Chemo < RT < Chemo	15	21.1
Chemotherapy only	1	1.4
Surgery < Chemo/RT	3	4.2
No primary treatment registered	4	5.6

6. Survival

6.1 Observed and Relative Survival

Survival results for patients with a nasopharyngeal cancer are shown in Table 7. Additionally to the above described exclusion criteria for all analyses, one patient is excluded from the survival analysis because he/she is lost to follow-up at the incidence date. About half of the patients diagnosed with a nasopharyngeal tumour deceases during the first five years after diagnosis (5-year relative survival: 52.8%).

Table 7. Nasopharyngeal Cancer: Observed and Relative Survival (Flemish Region, 2004-2007)

N at risk	Observed Survival (%)					Relative Survival (%)				
	1 year	2 year	3 year	4 year	5 year	1 year	2 year	3 year	4 year	5 year
70	81.4	65.7	61.4	57.1	49.8	82.9	67.9	64.0	60.0	52.8

No further analyses have been performed because of the low number at risk which makes it impossible to have multiple subgroups with 35 or more patients.

7. Analyses by Volume

During the period 2004-2007, Belgian patients with nasopharyngeal cancer are treated in 15 different Flemish hospitals. The mean number of patients (during the period 2004-2007) by hospital is 4.9 and the median is 3, with a range between 1 and 14. The distribution of the number of patients (=volume) per hospital is displayed in Figure 5.

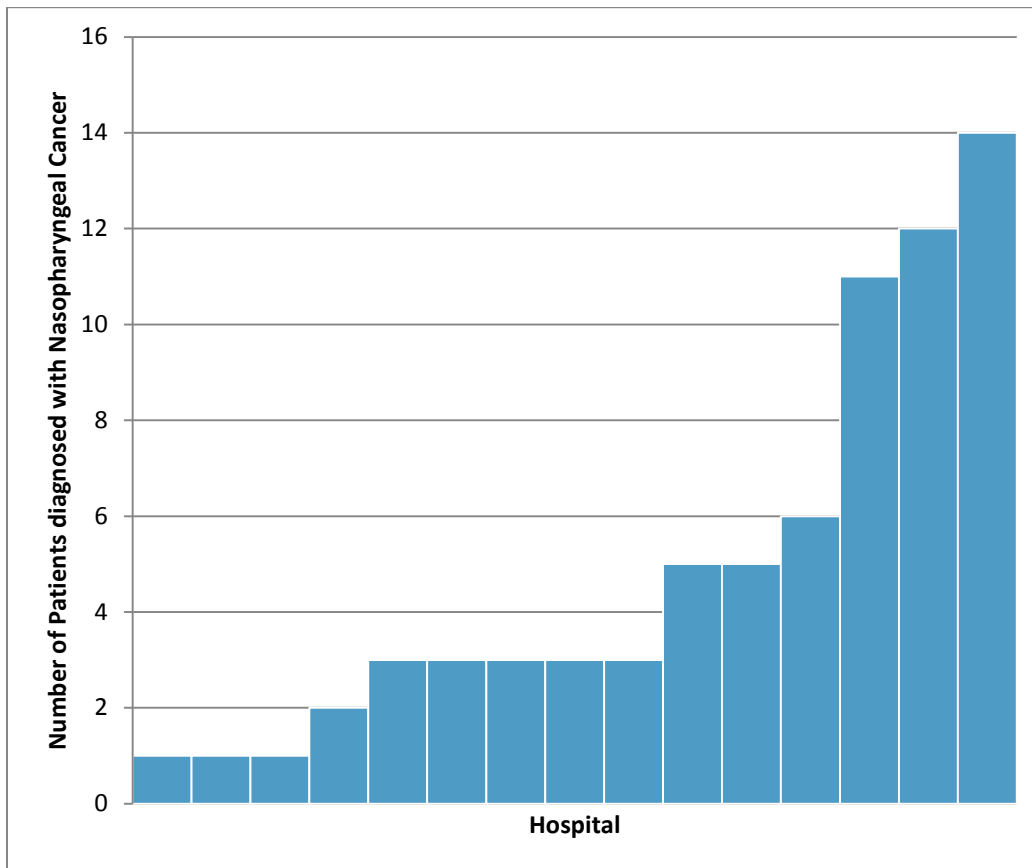


Figure 5. Distribution of Patients with Nasopharyngeal Cancer by Hospital (Flemish Hospitals, 2004-2007)

The low number of patients with nasopharyngeal cancer prevents further analyses based on volume of the hospital.

8. References

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