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Variation in head and neck cancer care in the Netherlands: A retrospective cohort evaluation of incidence, treatment and outcome

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Abstract

Background: To explore variation in numbers and treatment between hospitals that treat head and neck cancer (HNC) in the Netherlands.
Material and methods: Patient, tumor and treatment characteristics were collected from the Netherlands Cancer Registry, while histopathological features were obtained by linkage to the national pathology record register PALGA. Inter-hospital variation in volume, stage, treatment, pathologically confirmed loco-regional recurrence and overall survival rate was evaluated by tumor site.
Results: In total, 2094 newly diagnosed patients were included, ranging from 65 to 417 patients in participating hospitals treating HNC in 2008. Oral cavity cancer was mainly treated by surgery only, ranging from 46 to 82% per hospital, while the proportion of surgery with (chemo)radiotherapy ranged from 18 to 40%. Increasing age, male sex, and high stage were associated with a higher hazard of dying. In

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oropharynx cancer, the use of (chemo)radiotherapy varied from 31 to 82% between hospitals. We found an indication that higher volume was associated with a lower overall hazard of dying for the total group, but not by subsite. Low numbers, e.g. for salivary gland, nasopharynx, nasal cavity and paranasal sinus, did not permit all desired analyses.

Conclusion: This study revealed significant interhospital variation in numbers and treatment of especially oropharyngeal and oral cavity cancer. This study is limited because we had to rely on data recorded in the past for a different purpose. To understand whether this variation is unwanted, future research should be based on prospectively collected data, including detailed information on recurrences, additional case-mix information and cause of death.

Keywords: Head and neck cancer; Outcome; Survival; Epidemiology; Treatment; Quality of care

Introduction

Head and neck cancer (HNC) consists of a heterogeneous group of cancers. The individual types are characterized by their low incidences, but as group they take the 7th and 9th place in men and women, respectively, in the Netherlands.[1]

Because of the many vital functions in the head and neck, the delicate balance between optimal oncological and functional outcome characterizes treatment choices for of HNC. Centralization of care was shown to improve outcome in HNC and other high-complex types of cancer treatment.[2–9]

Since the foundation of the Dutch Head and Neck Society (DHNS) in 1984, over 90% of HNC patients are treated in specialized head and neck cancer centers (HNCC) in the Netherlands.[10] Several HNCCs collaborate with regional hospitals (Preferred Partner clinics (PPC)). In the Netherlands, possibly related to this centralization, survival rates are good for HNC compared to other European countries.[11,12]

Despite the presence of national guidelines, differences in treatment patterns have been described for the American[13] and British[14] setting. To discover the extent of variation between hospitals treating HNC in the Netherlands, we studied variation in patient and tumor characteristics, type of treatment, volume, recurrences and overall survival for HNC patients within the participating hospitals.

Patients and methods

Data sources

All patients diagnosed with primary invasive HNC in 2008 identified in the Netherlands Cancer Registry (NCR) and known in one of the participating hospitals were included. Patients with carcinoma in situ, skin cancer, sarcomas or hematological malignancies of the head and neck area were excluded.

The NCR is population-based and cancer cases are identified from pathology records received from the nationwide pathology network PALGA, as well as from the hospital discharge registry. The completeness of the NCR was estimated to equal at least 95%.[15] Following notification, trained tumor registration clerks abstract a minimum data set, including patient, tumor and treatment characteristics from hospital records.

To evaluate recurrences within 5 year from diagnosis, the dataset of the NCR was linked to PALGA data by a trusted third party. PALGA data included all conclusions from pathology reports, containing information on tissue site, procedure for tissue retrieval, histopathological diagnosis and date of specimen retrieval.

Participating hospitals (HNCC N = 7 and PPC N = 3) consented to anonymous analyses of their data; an independent employee at the NCR performed anonymization. Because of the retrospective character of the study, ethical approval was not required, as was advised by the institutional review board.

Definitions

Patients were classified based on ICD-O-3[16] code: oral cavity cancer (C02, C03, C04, C05.0, C05.8, C05.9, C06), oropharyngeal cancer (C01.9, C05.1, C05.2, C09, C10 (except C10.1)), laryngeal cancer (C10.1, C32), hypopharyngeal cancer (C12, C13) and cancer at other subsites [salivary gland, nasopharynx, para-nasal sinus or nasal cavity] (C07, C08, C11, C30, C31, C14).

In case patients were known in more than one HNCC, the center in which patients were treated was chosen as coding center. Second opinions without treatment were not included in the numbers per center. Volume was included in accordance with the previous report by Halm et al.[17]

Pathological TNM (6th edition[18]) was used and complemented with the clinical classification if pathological stage was unavailable.

Treatment was classified into 4 groups: surgery only, surgery plus (chemo-)radiotherapy (C)RT, (C)RT or other/palliative therapy. Patients with distant metastases at diagnosis (M+) or untreated patients were excluded from analyses on treatment and survival.

All recurrences reported are pathologically verified recurrences, since the pathology databank was our only

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