



Head and Neck Cancer in Elderly

Essay

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List of Abbreviations

5FU	5-Fluorouracil
ACE-27	Adult Comorbidity Evaluation
ADL	Activities of daily living
AJCC	American Joint Committee on Cancer
AP	Anteroposterior
ASA	American society for anaesthesiologists
ATP	Adenosine triphosphate
AUC	Area under the curve
BFI	Brief fatigue inventory
CALGB	Cancer and Leukemia Group B
CBC	Complete Blood Count
CFRT	Conformal Radiotherapy
CGA	Comprehensive geriatric assessment
CHART	Continuous Hyperfractionated Accelerated Radiotherapy
CIRSG	Cumulative Index Rating Scale for Geriatrics
CRT	Chemoradiotherapy
CSS	cancer-specific survival
CT	Computed Tomography / Chemotherapy
CTV	Clinical Target Volume
DSS	disease-specific survival
EBRT	External beam radiation therapy
EBV	Epstein-Bar Virus
ECOG	Eastern Cooperative Oncology Group

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EGFR	Epidermal Growth Factor Receptor
EJV	External Jugular Vein
EORTC	European Organization for Research and Treatment of Cancer
FDG-PET	Fluorodeoxyglucose Radiolabeled with 18F-Positron Emission Tomography
GDS	Geriatric depression scale
GM-CSF	Granulocyte macrophage colony-stimulating factor
GORTEC	The French Radiotherapy Oncology Group for Head and Neck Cancer (Groupe Oncologie Radiothérapie Tête et Cou)
GSTTC	Gruppo di Studio sui Tumori della Testa
GTV	Gross Target Volume
Gy	Gray
HDR	High dose rate brachetherapy
HLAs	Human Leukocyte Antigens
HN	Head & Neck
HNC	Head and Neck Cancer
HNSCC	Head and Neck Squamous Cell Carcinoma
HR	Hazard ratio
IADL	Instrumental activities of daily living
IGRT	Image-Guided Radiotherapy
IJV	Internal Jugular Vein
IMRT	Intensity Modulated Radiation Therapy

KeV	Kilo electron Volt
KPS	Karnofsky Performance Status
LC	local control
LDR	Low dose rate brachethrapy
Linac	Linear Accelerator
M: F	Male to Female ratio
MAb	monoclonal antibodies
MACH-NC study	Meta-Analysis of Chemotherapy in Head and Neck Cancer
MEN II & III	Multiple Endocrine Neoplasia Type II & III
MeV	Mega electron Volt
MMS	Mini-mental state
MMSE	Mini Mental State Examination
MRI	Magnetic Resonance Imaging
MRND	Modified radical neck dissection
MSKCC	Memorial Sloan Kettering Cancer Center
MTC	Medullary Thyroid Cancer
NA	not available
NCI	National Cancer Institute
NPC	Nasopharyngeal Cancer (or Carcinoma)
OARs (ORs)	Organs at Risk
OR	odds ratio
OS	overall survival
PACE	Preoperative assessment of cancer in the elderly
PET	Positron Emission Tomography

PFS	progression-free survival
PGE	Prostaglandins
PS	Performance status
PT	primary tumor
PTV	Planning Target Volume
RR	relative risk
RT	Radiation Therapy (Radiotherapy)
RTOG	Radiation Therapy Oncology Group
SAN	Spinal accessory nerve
SCC	Squamous Cell Carcinoma
SCM	Sternoclinomastoid Muscle
SEER	Surveillance, Epidemiology and End Results Program
SIB	Simultaneous Integrated Boost
SIC	Satariano's index of co-morbidities
TKI	tyrosine kinase inhibitors
UW-QOL	University of Washington- Quality of Life

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Introduction

Head and neck cancer (HNC) is a group of malignancies involving oral cavity, pharynx, ear/nose, paranasal sinuses, pharyngeoesophageal junction and larynx.

Overall, head and neck cancer accounts for more than 550,000 cases annually worldwide (*Parkn et al., 2012*). Males are affected significantly more than females with a ratio ranging from 2:1 to 4:1. The incidence rate in males exceeds 20 per 100,000 in regions of France, Hong Kong, the Indian subcontinent, central and Eastern Europe, Spain, Italy, Brazil and among African Americans in the United States. Mouth and tongue cancers are more common in the Indian subcontinent, nasopharyngeal cancer is more common in Hong Kong, and pharyngeal and/or laryngeal cancers are more common in other populations (*Sankaranarayanan et al., 2012*).

In the United States, head and neck cancer accounts for 3 percent of malignancies, with an estimated 52,000 Americans developing head and neck cancer annually and 11,500 dying from the disease (*Siegel et al., 2012*).

The mortality associated with head and neck cancer in African Americans is higher than in whites (median overall survival 21 versus 71 months). The poorer prognosis appears to

be due in large part to poorer outcomes in patients with oropharyngeal cancer, which is much less common incidence in blacks compared with white patients (4 versus 34 percent) (*Settle et al., 2009*).

Head and neck cancers tend to be diagnosed at older ages. Nasopharynx shows a younger age at diagnosis than other cancers, with 40% of cases diagnosed at ages younger than 50. Cancer of the lip is diagnosed more frequently at older ages than cancers at other head and neck sites, with approximately 70% of cases diagnosed at age 60 or older (*Jay et al., 2006*).

There are many risk factors for squamous cell carcinoma of head and neck region. The strongest is the consumption of tobacco along with alcohol is the major ‘preventable’ risk factors. Both tobacco and alcohol are dose-dependent and synergistic risk factors (*Basu et al., 2008*).

Recent studies have shown an inverse relationship of fruits and vegetables intake with HNC (*Chuang et al., 2012*) while a diet rich in red meat and fats pose increased risk (*Edefonti et al., 2012*). Lack of nutrients like Vitamin B12 and Folate might have synergetic effect, along with habit of tobacco consumption on the process of carcinogenesis (*Raval et al., 2002*).

The people belonging to lower socioeconomic group tend to have higher risk of HNC (*Agarwal et al., 2011*).

Recently HNC have been proposed to have a viral aetiology like Human Papilloma Virus (HPV) (*Rautava et al., 2012*), Epstein-Barr Virus (EBV) as well as being associated with various chromosomal deletions and other alterations, and mutations in tumor suppressor genes like p53 (*Cadoni et al., 2012*). Overexpression of p53 in the margins of tumor could be a gross predictor of clinical outcome (*Jalali et al., 2011*). Another p63 gene is reported to play a role in the normal cellular and carcinogenetic proliferation P63 marker which can be used for a confirmatory diagnosis of the squamous cell carcinomas of HNC (*Khan et al., 2012*).

Several assorted histological types of tumors are found in the head and neck region. Between 70% to 90% of head and neck cancers are epithelial in origin, and squamous cell carcinoma constitutes 66.7% of carcinomas and 47.8% of all head and neck cancers (*Adeyemi et al., 2008*). About 30% of all lymphomas occur in this region and they comprise the second most common primary malignancy in the head and neck region (*Dubey et al., 2003*). About 15% to 20% of all sarcomas are diagnosed in the head and neck region (*McMains et al., 2008*). Osteogenic sarcoma, rhabdomyosarcoma, malignant fibrous

histiocytoma and angiosarcoma are the most common histological types (*Sturgis et al., 2003*).

Although the majority of HNC occur between the fifth and sixth decade, their onset in patients older than 60 years is not a rare event. It has been estimated that as many as 24% of HNC are found in patients older than 70 years (*Balducci et al., 2006*).

Elderly patients are characterized by age-specific problems such as multi-organ functional decline, depression, alterations of mental status, reduced nutritional status and absence of social support, all of which have the potential to interfere with the diagnosis and treatment of their cancer. These problems are seen with different grades of severity in this subpopulation and, for this reason, chronological age by itself cannot be the only criterion for treatment planning. The biological age of each patient is one of the most important parameters and should be defined individually, based on co-morbidities and performance status (*Syrigos et al., 2007*).

The National Institute on Aging and the National Institutes of Health have redefined the term “elderly” as the age group greater or equal to 65 years, which covers three subcategories, namely: the “young old” for those aged between 65 and 74 years, the “older old” for those aged 75–85 years and the “oldest old” for subjects aged more than 85 years old (*Parker et al., 2007*).
