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# Initial work-up in head and neck squamous cell carcinoma

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**Abstract.** Objective: To propose national guidelines for the initial assessment of head and neck squamous cell carcinoma.
Methods: Comprehensive review of the literature and consensus discussion with national experts in the field.
Results: Consensus guidelines are proposed concerning the work-up of patients with a presumed diagnosis of a squamous cell carcinoma of the upper aero-digestive tract.

## Introduction

The initial assessment of a patient with a head and neck cancer is critical in order to accurately define the staging of the tumour, thus leading to a therapeutic decision. However, physicians should remain aware of individual factors such as performance status, age, nutritional status, medical conditions and patient compliance. All this information is required in order to propose an optimal therapeutic approach.

## Work-up

The initial work-up should include:

1. A clinical evaluation.
2. An advanced clinical evaluation.
3. Relevant imaging studies.
4. Relevant laboratory tests.
5. A thorough examination and endoscopy under general anaesthesia.

At the end of the work-up procedure, a tumour must be clinically staged before starting a treatment modality.

1. *Clinical evaluation*

*A complete history* of the disease is required, including the presence and duration of symptoms relating to the localization of the primary tumour. History of risk factors should be included: smoking, alcohol intake and viral exposure (HPV). The occurrence and extent of weight loss need to be assessed as well as the performance status. Karnofsky and/or E.Co.G – WHO scales are strongly recommended.

*A complete examination of the head and neck region* includes a thorough examination of the oral cavity, the pharynx and the larynx. Indirect laryngoscopy may be done as a preliminary examination but needs to be followed by a fibre-optic or rigid telescope examination of the pharynx and larynx, to more accurately delineate tumour extension and rule out a second primary tumour.

Assessment of the mandible and dentition is required as well as the status of the upper airway, looking for the presence of a potential upper airway obstruction. Neck examination is paramount. Bilateral neck palpation is needed to assess the lymph node status. Any clinically presumed invaded lymph node must be carefully reported regarding size, mobility, and location according to the system initially proposed by the Memorial Sloan-Kettering Cancer Center[1] and adopted by the American Academy of Otolaryngology, Head and Neck surgery.[2]

*Biopsy under local anaesthesia*: Biopsy can be performed under local anaesthesia in most patients with an oral and oro-pharyngeal carcinoma (carcinoma of the base of tongue excluded) in the one-day outpatient clinic. However, a biopsy as well as an accurate assessment of the anatomical extension of a hypo-pharyngeal,

laryngeal and some oro-pharyngeal carcinoma's (e.g. base of tongue carcinoma) requires direct laryngoscopy under general anaesthesia.

*Fine Needle Aspiration Biopsy (FNAB)*: FNAB of any suspected lymph node metastasis in the neck is acceptable in selected cases and particularly when there is no primary found (metastasis from a so-called "unknown primary") or when a biopsy of the primary tumour is inconclusive.

Open biopsy of any suspected metastatic disease must be strictly avoided unless no primary has been found. In this last situation, the surgeon should ask the pathologist for a frozen section examination of the resected lymph node during the surgical procedure. When the result is positive for a squamous cell carcinoma, the surgeon must immediately perform a comprehensive radical or modified radical neck dissection according to the N status.[3] If not previously performed, a rigid endoscopy should simultaneously be done looking for the presence of a primary cancer located in upper aero-digestive tract.

2. *Advanced Clinical evaluation*

All the charts of patients with a carcinoma of the head and neck should be discussed in a multi-disciplinary board comprising all physicians and paramedical staff potentially involved in the diagnosis and treatment.

a) Radiation therapy

A consultation with a radiation oncologist is recommended in anticipation of possible use of postoperative radiotherapy or use of radiation therapy as a definitive primary modality of treatment alone or in combination with chemotherapy.

b) Dental examination

A thorough examination of the teeth by an oral/ maxillofacial surgeon is recommended to assess the dental status and to make recommendations regarding the necessity of teeth extractions in anticipation of possible radiotherapy.

c) Nutritional assessment

Malnutrition is not infrequent in patients with head and neck cancer. Need for naso-gastric tube feeding or gastrostomy must be assessed before starting treatment. Pre-treatment percutaneous gastrostomy is recommended, in particular before a major head and neck procedure requiring intensive postoperative swallowing rehabilitation and before non-surgical organ preservation protocols in patients with complaints of dysphagia.

d) Other examinations

If needed, examination by appropriate specialists (e.g. cardiologist, pneumologist, and anaesthesiologist) is requested, to assess co-morbid factors that may preclude or increase the risk of general anaesthesia or a major surgical procedure and consequently, influence the therapeutic decision-making process.

3. *Imaging*

a) Chest

A chest-X-ray (antero-posterior and lateral) is generally required by the anaesthesiologist before the endoscopic procedure under general anaesthesia. Additionally, a chest-X-ray may be of help to rule out a synchronous pulmonary tumour, distant metastases and chronic pulmonary disease.

Early synchronous lung cancer and distant metastases are better detected using a thoracic spiral CT scan (level 2 of evidence [4,5]) (level 4 of evidence [6,7]).

b) Panoramic X-ray of the jaws

A panoramic X-ray of the upper and lower jaws is necessary in most oral and oro-pharyngeal carcinomas in order to assess mandibular bone invasion. It should also be systematically performed to assess the status of the patient's dentition.

c) Local and regional CT/MRI of the head and neck

CT or MRI of the head and neck region are essential to assess the extent of the primary tumour, the presence and status of cervical as well as the presence of para- or retro-pharyngeal lymph nodes. Thus, the skull base should be included in all imaging. In cases with extensive lymphadenopathy, the relationship to the carotid artery, the paraspinal muscles and the parotid gland need to be clarified.

MRI is generally considered as more accurate to delineate tumour extension in oral and oro-pharyngeal cancer. A CT scan is best indicated in laryngeal and hypopharyngeal cancer, can be of help in assessment of mandibular bone invasion, and generally provides a better neck evaluation.

A combination of MRI and CT is generally not required but may be indicated when questions remain regarding tumour extension (e.g. cartilage or bony invasion).

d) FDG-PET scan

It remains to be demonstrated that FDG-PET is of any added value in

the initial work up of head and neck cancer patients. A PET scan should not be considered as a standard imaging modality in the initial evaluation. Its use should remain investigational under the control of well-designed prospective trials. A PET scan may be of some interest in the assessment of a neck metastasis from an unknown primary tumour. A PET scan does not add significantly to the detection of an occult primary tumour in patients who had already been comprehensively evaluated by clinical and radiological investigations. It is of substantial benefit, however, in detecting unsuspected distant disease in patients with undifferentiated nodal histological findings and in delineating regional disease in patients with N2 disease.[8]

e) Metastatic work up

A comprehensive and expensive metastatic work up is generally not indicated in the absence of clinical symptoms or signs suggesting extension. When a CT of the head and neck is performed for regional assessment, a thoracic CT requires only little additional time and is more sensitive than an x-ray to rule out second lung primary tumour and distant metastases.[4-7]

4. *Laboratory tests*

Pre-anaesthesia laboratory tests are required. Because head and neck cancer patients are frequently anaemic, a full blood count and electrolyte analysis are useful. An assessment of the nutritional status (alcoholic, malnutrition) helps to identify patients at risk and pretreatment nutritional optimization can be planned.[9,10] Baseline liver function tests are frequently asked. Baseline thyroid function assessment is useful before starting treatment particularly when surgery of the neck and/or radiotherapy are scheduled.

5. *Examination and endoscopy under general anaesthesia*

A direct endoscopy under general anaesthesia is indicated in most patients with head and neck squamous cell carcinoma.[10] Additionally, in laryngeal and hypo-pharyngeal cancer, accurate anatomic localization, extension assessment and biopsy are possible only by this procedure.

An exception to this rule is a straight contra-indication to general anaesthesia. Direct extension of the disease is assessed, in particular extension to adjacent subregions. The adequacy of the airway is carefully checked and tracheostomy is sometimes indicated in severe respiratory distress. Palpation is important for mobile tongue and base of tongue carcinoma's in order to delineate deep infiltration.

Drawings and pictures showing the tumour are of value.

Tracheoscopy is helpful in patients with laryngeal cancer to assess subglottic extension.

Rigid oesophagoscopy is particularly helpful in hypo-pharyngeal cancer to rule out infiltration of the cervical oesophagus.

Flexible oesogastroscopy is optional but may be of interest not only to detect synchronous oesophageal carcinoma but also to identify oesophagitis and/or gastro-oesophageal reflux, which may potentially become responsible for complications during the treatment procedure.

Direct endoscopy and examination under general anaesthesia should be carried out in the institution where the patient will be treated in order to avoid repeated examination.

At the end of the work up procedure, the TNM classification of the AJCC or UICC must be used to stage the tumour in order to propose an optimal therapeutic strategy according to institutional treatment guidelines.

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