Part 2. General Information about Head and Neck Cancers

This section briefly outlines general information that applies to all Head and Neck cancers. More specific information, as well as treatment options, will be found in Part 4 for each specific disease.

2.1 Histology and Pathology

The majority of the carcinomas (i.e. epithelial-derived tumours) of the Head and Neck region are squamous cell carcinoma with some notable exceptions. Invasive squamous cell carcinoma typically arises on a background of squamous dysplasia of varying degree (generally severe dysplasia), which may be multifocal and discontinuous (field effect).

Definitive treatment of invasive squamous cell carcinoma (SCC) is preceded by biopsy and grading. A three-tiered grading system is used, which includes: well-differentiated or grade 1 (usually prominently keratinizing and obviously squamous, which may be difficult to distinguish from a benign entity), moderately-differentiated or grade 2 (the majority) and poorly-differentiated or grade 3 (minimal or no keratinization and often difficult to definitively diagnose as of squamous origin).

In addition to typical squamous cell carcinoma, several variants occur. Verrucous carcinoma is a well-differentiated squamous carcinoma with locally destructive growth, but which typically has no metastatic potential. Spindle cell/sarcomatoid carcinoma, basaloid squamous cell carcinoma and adenosquamous carcinoma are high

grade, typically aggressive variants. Papillary squamous cell carcinoma is an exophytic, papillary variant that may or may not invade underlying tissues.

Other epithelial cancers of the head and neck are often site-specific. Nasopharyngeal carcinoma may be keratinizing squamous cell carcinoma or non-keratinizing carcinoma (differentiated and undifferentiated/ lymphoepithelioma subtypes). Salivary gland tumours are a distinct group of tumours arising within minor or major salivary glands and seromucinous glands throughout the upper aerodigestive tract. Many nasal cavity tumours are adenocarcinomas, of seromucinous or surface epithelial origin. Small cell/neuroendocrine carcinoma (akin to its pulmonary counterpart) is a high-grade cancer that can occur anywhere in the upper aerodigestive tract.

Histologic diagnosis may be preceded by fine needle aspiration (FNA) cytology, usually of metastatic tumours in the neck or of major salivary glands. Definitive FNA diagnosis is often hindered by cystic degeneration and necrosis within these metastatic foci. The histologic (tissue) diagnosis of SCC is usually not difficult and can be made on hematoxylin and eosin-stained slides. Adjunctive histochemical techniques primarily include mucin stains (periodic acid Schiff, mucicarmine and Alcian blue) to search for glandular differentiation. Immunohistochemical stains may be required to differentiate between an epithelial or non-epithelial malignancy or to subcategorize carcinomas. These stains would include: keratin (epithelial tumours), leucocyte common antigen (lymphoma), S100 and HMB45 (melanoma), and markers of neuroendocrine differentiation (chromogranin, synaptophysin). Other markers may be needed in certain circumstances. Molecular and cytogenetic techniques are not typically employed at the current time in the QEII HSC laboratory, except in lymphoma and sarcoma diagnosis. Electron microscopy is used rarely.

Surgical pathology reports from head and neck cancers should include the following information:

- tumour type,
- grade,
- location,
- extent of invasion (including bone invasion),
- greatest dimension,
- presence of vascular or perineural invasion,
- margin status,
- any additional findings (eg. dysplasia of surface mucosa),
- lymph node status (with number of involved nodes, largest size, presence or absence of extracapsular spread).

Mucosal and soft tissue margins are usually assessed using frozen sections, which are re-evaluated for “permanent” histology after the surgery is complete. The closest margin(s) of the main resection specimen is also assessed, realizing that additional tissue may have been taken beyond these margins and submitted for frozen section.

Skin cancers are also frequently found in the head and neck area. These include squamous cell carcinoma, basal cell carcinoma and melanoma. Uncommon skin cancers include Merkel cell and adnexal carcinomas.

The Head and Neck Cancer Site Team strongly recommends consultation by expert pathologists in case of an unclear diagnosis.

2.2 Staging

Understanding the extent of a cancer at the time of diagnosis is perhaps the single most important determinant of the future care plan and ultimately a patient's outcome. Commonly referred to as "staging" the cancer, this concept of determining disease extent incorporates various clinical parameters and applies a standardized approach to assign a stage value. TNM is the common staging system for most cancers including Head and Neck cancers.

Please see Appendix I for the American Joint Committee on Cancer (AJCC) staging tables for Head and Neck cancers.

2.3 Management Approaches

It is generally accepted that the decisions in the evaluation and management of head and neck cancer are subject to a series of factors which include:

- Available medical expertise within the multidisciplinary team and using the best available evidence
- The presence of medical comorbid conditions of the patient.
- The wishes and desires of the patient and the support system that is available to them.

Management of the patient with head and neck cancer is complex. Each specific site of disease, the extent of disease, and the pathologic findings dictate the appropriate surgical procedure, radiation fields, dose and fractionation, and indications for chemotherapy. For this reason, the following guidelines are grouped accordingly. However, evaluation and therapy recommendations should be tailored to the individual patient.

Single modality treatment with surgery or radiotherapy is generally recommended for the approximately 40% of patients who present with early stage disease (stage I or stage II). The two modalities result in similar survival in these individuals. In contrast, for the 60% of patients with locally advanced disease at diagnosis, combined modality therapy is generally recommended.

Commonly, the treatment strategy for the primary influences treatment of the neck. However, a unique aspect of head and neck cancer treatment is that different modalities or combination of modalities may be utilized at the primary site than those employed for regional nodal disease