Assessment of Malignant Laryngeal Neoplasms

Office-Based Endoscopy and Direct laryngoscopy Compared with Computed Tomography of The Neck

A Thesis

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Ahmed Mohamed Refaat Salem

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CT ……...computed tomography
DL…….Direct laryngoscopy
OB……Office based
WHO…….. world health organization
OBFES ……office-based flexible endoscopic surgery
AIOLPs……in-office laryngeal procedures
VF ……Vocal fold
VFI…… .Vocal fold injection
TNE……..Transnasal esophagoscopy.
BP…….Blood pressure.
AJCC ……...American Joint Committee on Cancer stage determination.
MinO…… ……Minor overstaging by not more than one stage
MajO…… Major overstaging by more than one stage.
MinU……..... Minor understaging by not more than one stage
MajU ……Major understaging by more than one stage

AIM OF THE WORK

The goal of this study is to clarify the role of office-based endoscopy and direct laryngoscopy compared with computed tomography in the assessment of topographic extension of laryngeal malignant neoplasms.

Introduction

Head and neck cancer is a term that encompasses epithelial malignancies that arise in the paranasal sinuses, nasal cavity, oral cavity, pharynx, and larynx. Laryngeal malignancy is the most frequent primary malignancy in the upper aerodigestive tract except for oral cavity malignancies. Squamous cell carcinomas form the vast majority of malignant laryngeal diseases (more than 90%). **(Rousseau and Badoual, 2012)**

The most important factor in treatment planning of laryngeal carcinoma is the accuracy of pretherapeutic staging. The limitation of clinical and endoscopic tumor evaluation to assess the exact tumor extension of laryngeal carcinomas is well recognized **(Pillsbury and Kirchner 1979).**.

Since 1976, computed tomography (CT) has become a reliable technique for evaluating most tumors of the head and neck region. It became the most important radiologic adjunct in the pretherapeutic staging of laryngopharyngeal cancer **(Archer et al., 1983)**.

According to **Castelijns et al. (1988)** CT accurately demonstrates gross cartilage invasion, especially in the presence of extralaryngeal tumor spread, but fails to detect minor cartilage invasion in many cases. The ability of the CT to detect neoplastic invasion varies widely with reported sensitivities of 46-66% and specificities of 84- 94%.

All clinical/endoscopic staging errors consisted of an underestimation that resulted from a failure to clinically identify invasion of the paraglottic and preepiglottic space and destruction of laryngeal cartilage with extralaryngeal tumor invasion (**Zbaren et al., 1996)**

With recent improvements in techniques of obtaining laryngeal anesthesia and with the quality of flexible endoscopes, many of these procedures can be performed under local anesthesia in an office-based setting **(Sunil, 2012)**.

Office-based endoscopy is performed in clinic examination suite. This suite consists of an examination chair and a video tower with photodocumentation capability. No cardiopulmonary monitoring is performed during the procedure; however, the patient's vital signs are collected before the visit **(Sunil, 2012)**.

The major advantage of office-based endoscopy over traditional direct laryngoscopy is avoidance of general anesthesia which might be contraindicated in some cases especially the old age group of patients which characterizes malignancies of the larynx and hypopharynx. Other advantages include lower cost, more efficient use of the patient's and surgeon's time and patient satisfaction **(Koufman et al., 2007).**

According to **Cohen et al. (2013)** the specificity of trans-nasal-laryngoscope in diagnosing invasive carcinoma was excellent, but the sensitivity of diagnosing a suspicious lesion as being carcinoma in situ or invasive carcinoma was only 69.2**%.**

Postma et al. (2002) reported 100% accuracy of transnasal esophagoscopy in 17 patients with lesions of the upper aerodigestive tract. All 17 masses were presumptively suspected to be malignant and were later inspected and verified as being malignant through panendoscopy with biopsy. The results of transnasal esophagoscopy and panendoscopy with biopsy specimens were identical.

The reported cost advantage in transoral oral office-based surgery results from a dramatically decreased utilization of

hospital resources such as operating rooms, recovery suites, prolonged cardiopulmonary monitoring, intravenous medications, and the skilled medical staff required to provide a safe general anesthetic and recovery (**Filho et al., 2006)**.

More studies are required to address the efficacy of office based endoscopy and direct laryngoscopy compared with computed tomography in the assessment of topographic extension of laryngeal carcinoma.

Malignant laryngeal neoplasm

The incidence of laryngeal cancer according to WHO, ranges from 2.5 to 17.2 per 100,000 per year as reported by (The Department of Health Guidance) and it represents approximately 3% of new malignancy diagnosed annually worldwide. Ninety percent of laryngeal malignancy is due to squamous cell carcinoma with lymphoma being the second most frequent diagnosis. Most patients with laryngeal carcinoma develop hoarseness however other clinical presentations include a neck mass, dysphagia, stridor and haemoptysis. Impaired laryngeal function from carcinoma and its treatment results in marked disturbance of communication, breathing and swallowing.

Cigarette smoking, particularly, and other forms of tobacco and alcohol have been considered probable etiological factors in laryngeal cancer but a positive causal relationship has not been substantiated statistically. That smoking causes changes in the mucous membranes of the respiratory tract has been established by **Ryan et a1.(1955)** who believe that these changes progress and eventually change into various premalignant keratoses.

Leukoplakia is known to be a precursor of cancer of the true vocal cords. The cause of leukoplakia itself is unknown but the