Head & Neck Cancer Two-week Referral Study: Heading in the right direction?

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Area	Symptoms	Frequency	Cancers diagnosed	Sensitivity	Specifi city	PPV	OR ± 95% CI
Laryngeal / Pharyngeal	≥ 40 years old with persistent unexplained hoarseness (≥ 3 weeks)	245	6	0.162	0.748	0.024	0.57, [-0.31, 1.46]
	Lump/mass in the neck with suspicious clinical features	163	15	0.405	0.844	0.092	3.68, [3.00, 4.36]*
	≥ 4 weeks of persistent, particularly unilateral, discomfort in the throat or throat pain	229	5	0.135	0.763	0.022	0.50, [-0.45, 1.46]
	≥ 40 years old with ≥ 3 weeks of dysphagia	83	2	0.054	0.914	0.024	0.61, [-0.83, 2.05]
	≥ 40 years old with ≥ 3 weeks of odynophagia	31	1	0.027	0.968	0.032	0.85, [-1.17, 2.87]
	≥ 40 years old with ≥ 3 weeks of otalgia	18	1	0.027	0.982	0.056	1.52, [-0.52, 3.56]
Ear / Nose / Sinus	Persistent unilateral otalgia	32	0	-	0.966	-	-
	Unilateral tinnitus	55	0	-	0.942	-	-
	Serosanguinous nasal discharge which persists for more than three weeks	17	0	-	0.982	-	-
	Unilateral nasal obstruction associated with a purulent discharge	21	0	-	0.978	-	-
	Facial palsy/cranial neuropathies	2	0	-	0.998	-	-
	Orbital masses	4	0	-	0.996	-	-
	Severe facial pain	6	0	-	0.994	-	-
Thyroid	Unexplained solitary thyroid lump	14	1	0.027	0.986	0.071	2.00, [-0.07, 4.06]
	Ultrasound suggestive of a thyroid cancer	2	0	-	0.998	-	-
Oral / Lip	≥ 3 weeks unexplained ulceration in the oral cavity	75	4	0.108	0.925	0.053	1.50, [0.43, 2.56]
	Suspicious lump/mass on the lip or in the oral cavity	98	7	0.189	0.904	0.071	2.19, [1.34, 3.05]*
	A red or red and white patch in the oral cavity suggestive of leukoplakia or erythroleukoplakia	47	4	0.108	0.955	0.085	2.55, [1.47, 3.63]*
	Tooth mobility not associated with periodontal disease	2	0	-	0.998	-	-
	Poor healing ≥ 3 weeks post tooth extraction	2	0	-	0.998	-	-
Salivary	≥ 40 years old with unexplained or persistent parotid or submandibular swelling	37	1	0.027	0.962	0.027	0.70, [-1.31, 2.72]
	Firm sub-mucosal swelling in the oral cavity	9	1	0.027	0.992	0.111	3.26, [1.16, 5.37]*
Others	Referral is due to clinical concerns that do not meet NICE/pan-London referral criteria	91	4	0.108	0.908	0.044	1.20, [0.14, 2.26]

Introduction

The incidence of head and neck cancer has risen by 30% in the UK since the early 1990s. Head and neck cancer (HNC) symptoms are widely variable and largely rely on their primary site. The National Institute for Health and Care Excellence (NICE) referral guidelines prompting urgent two-week referrals were updated in 2015. Additional symptoms with a lower threshold of 3% positive predictive values (PPV) were integrated¹.

Aim

This study aims to answer if the current list of risk factors and symptoms on referral guideline for suspected head and neck cancers is suitable. We hope to understand the risk factors and symptoms that occurred most frequently amongst cancer patients. Furthermore, we hope to clarify if the risk factors and symptoms of patients who were not diagnosed with head and neck are relevant for referrals.

Figure 1: Break down of patients included and excluded in the study. Percentages were calculated by number of patients in the respective categories divided by the total number of patients, n = 1036.

References

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Table 1: Symptoms frequency, number of cancer diagnosed, sensitivity, specificity, PPV and OR ± 95% CI.
Yellow highlight: Odds ratio with 95% CI was significant, or PPV more than 3%
Red highlight: there were no positive diagnoses for patients referred with these symptoms

Methods

The risk factors and symptoms of consecutive patients were collected retrospectively from referral letters to University College London Hospital (UCLH) for suspected head and neck cancer on the 2-week wait pathway. In total, 984 patients with HNC referrals to UCLH over a 6-month period in 2016 were included in the study.

Sensitivity, specificity and PPV were calculated to determine the diagnostic efficacy of symptoms and risk factors. The presence or absence of risk factors and symptoms are categorical data. Hence, chi-square univariate analysis of risk factors was used to examine the presence or absence of risk factors and diagnosis. Odds ratio was used calculate symptoms and their efficacy in diagnosing cancer.

Results

The mean age of patients is 53.8 years old, ranging from 8 to 93 years old. Only 37 (3.76%) referrals resulted in a head and neck diagnosis. 4 of the 23 recommended symptoms demonstrated statistically significant results; suspicious neck lump (OR 3.68, CI [3.00, 4.36]), lump in lip/oral cavity (OR 2.19, CI [1.34, 3.05]), oral leukoplakia or erythroleukoplakia (OR 2.55, [1.47, 3.63]), and oral cavity swelling (OR 3.26, [1.16, 5.37]). 9 of the 23 symptoms had a PPV of over 3%.

The most common presenting symptoms that were “≥ 40 years old with persistent unexplained hoarseness (≥ 3 weeks)”, “lump/mass in the neck with suspicious clinical features” and “≥ 4 weeks of persistent discomfort in the throat”, where 245, 163 and 229 patients presented with each symptom respectively. However, only “lump/mass in the neck with suspicious clinical features” had a significant odds ratio (OR 3.68 ± 95% CI [3.00, 4.36]).

Conclusions

We have shown that the current referral guideline has not been effective at picking up patients with cancer. This has significantly reduced the pick-up rate from 10-15%²⁻³ to 3.76%. We recommend a review of the current HNC referral guidelines and perhaps further data collection for comparison.