

An audit of the suspected head and neck cancer two week pathway and the influence of socio-economic status

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Abstract

Clinical guidelines for recognising and referring suspected head and neck cancer (HNC) are well established. HNC rates are higher in lower socio-economic groups and outcome tends to be worse. The aim of this audit was to analyse three months of HNC suspected two-week referrals in terms of clinical characteristics, source of referral, and cancer rates with a specific focus on SES deprivation.

The sample comprised a three-month cohort of two-week suspected HNC referrals to Aintree Hospital with date of receipt of referral between 3 July and 29 September 2017.

There were 390 referrals, 60% female. Most (62%) lived in the most deprived quintile of English residential neighbourhoods, which contrasts markedly with the previously reported 37% of HNC Aintree patients 2008-2012 within the most deprived quartile. Swellings or lumps indicated a greater likelihood of presenting within 30 days ($p=0.001$). HNC rates were higher for patients referred by GPs ($p=0.02$) and for increased alcohol intake ($p=0.02$). There were deprivation trends for higher rates of HNC and higher rates of referral by GPs for those living in lesser deprived neighbourhoods.

In conclusion there is a much higher rate of patients referred who live in the most deprived of neighbourhoods than is seen in patients with HNC. Overall, these referred patients did not reflect the typical characteristics of HNC patients. More awareness and education in primary care specific to those from lower SES might reduce the number of 'worried well' and the demands on healthcare resources to deliver the two-week target.

Introduction

In 2005, the National Institute for Health and Care Excellence (NICE) first published clinical guidelines for the recognition and referral of suspected cancer and this document was updated in 2015.¹ The Department of Health has provided explicit timeframes in which patients with suspected cancer should be seen. The national target is 14 days from the day of referral from primary care. There is advice on who should be referred and what indicates the likelihood of head and neck cancer (HNC). Since the introduction of the two-week suspected cancer pathway, it has been acknowledged that the proportion of patients referred having HNC is relatively low. Langton et al (2016),² published a systematic review on the two-week rule in HNC and between 2000 and 2014 there were 17 studies with conversion rates (positive predictive value) ranging from 2.2% to 14.6%. There was evidence that two-week referral conversion rates were falling at the same time as detection rates (sensitivity) rising and this most likely reflects an increased number of referrals. Any increasing number of suspected cancer referrals places a higher demand for timely out-patient clinic appointments within 2 weeks and is a demand on NHS resources. This was reflected in a study by Brocklehurst et al³ which found that hospital location was the most important variable in predicting delay and those with a greater number of referrals struggled to meet the 2-week target. Infrastructure is required in terms of cancer trackers and urgent clinic slots.

The number of referrals correlates to socio-economic status (SES).³ This is not necessarily surprising given that it is well recognised that HNC is more

prevalent in patients from lower SES. ⁴ However the relationship between referrals on the 2-week pathway and SES has received little attention. This is potentially an important issue as delays could be linked to later stages at diagnosis and worse survival. ⁵ As the catchment area for our hospital covers some of the most deprived wards in England the aim of this audit was to analyse three months of HNC suspected two-week referrals with a focus on the relationship of SES in terms of clinical characteristics, source of referral, and cancer rates.

Material and methods

The sample comprised a three-month cohort of two-week suspected HNC referrals to Aintree Hospital with date of receipt of referral between 3 July and 29 September 2017. In addition to the computerised record, some manual extraction of information was required for smoking status, alcohol intake, date of birth (for age), postcode (for small area deprivation) and delay since symptom(s) first suspected by patient. The data for smoking status, alcohol intake and time since patient first aware of symptoms varied considerably in detail and this required broad categorisation for the purposes of analysis rather than trying to analyse numerically in terms of pack years, units of alcohol consumed and number of days since awareness. Symptoms and time being first aware of symptoms were documented from patient recall when first seen by the GDP/GMP.

The Index of Multiple Deprivation (IMD) ⁶ is the official measure of relative deprivation for small areas in England. The IMD 2015 is based on seven

different domains of deprivation each of which is based on a basket of indicators relating mainly to the tax year 2012/13. Every neighbourhood in England is ranked from 1 (most deprived area) to 32,844 (least deprived area) and it is common to describe how relatively deprived a neighbourhood is by whether it falls among the most deprived '20' per cent of small areas in England, though there is no definitive cut-off above which an area is described as 'deprived'. Deprivation 'quintiles' were analysed, and since a majority of patients in our sample lived in the most deprived quintile (20%) of English neighbourhoods these patients were compared to an aggregation of other patients living within lesser deprived neighbourhoods.

Fishers exact test was used to compare patient groups in regard to patient delay being under 30 days, professional delay being more than 14 days, having a cancer diagnosis, the presence of specific symptoms and being referred by a GGP. Missing data is reflected in varying denominators within tables. Statistical significance was taken as $p < 0.05$

Aintree University Hospital Clinical Audit Department approved this study.

Results

There were 390 referrals within the three-month period, 60% (233) female and 40% (157) male. Median (IQR) age was 58 (46-71) years. Three-quarters (75%, 291) were referred to ENT and one-quarter (25%, 99) to MFU. The General Medical Practitioner (GMP) was the source of the referral for 94% (366) with the General Dental Practitioner (DGP) being the source for 6% (24). Nearly two-thirds of patients (62%, 235/382) lived in neighbourhoods that were in the most deprived quintile within England, with 15% (58), 12%

(46), 5% (20) and 6% (23) living in the 2nd, 3rd, 4th and 5th lesser deprived neighbourhood quintiles. One third (33%, 127) were documented as smoking at the time of referral, 20% (78) were ex-smokers, 38% (148) were nonsmokers, with no documentation for 9% (37). Half (51%, 198) were documented with relatively low alcohol intake (<10 units per week, social, occasional), 16% (61) with a moderate intake of 10-39 units per week and 7% (29) with a heavier intake of 40 or more units per week, with no documentation for 26% (102). Symptoms first suspected by patients included 39% (153) with a swelling or lump, 26% (101) with hoarseness, 7% (29) with an ulcer, 6% (23) with a sore throat and 45% (174) with other symptoms. There were 104 patients who *only* had other symptoms such as mucosal lesions (32), throat issues/globus/swallowing problems (27), pain /soreness not otherwise specified (16), altered hearing (8), cough (5), others (23). Three quarters (79%, 307) had one symptom, 19% (74) had two and 2% (8) had three or four, unknown for one. The method of referral was recorded in 355 cases, with 174 by letter, 113 by fax and 68 electronic.

Patient delay between being first aware of symptoms and presentation to primary care was known for 297 patients while 3 patients were asymptomatic. One quarter (26%, 77/297) of patient delays were under 30 days (Table 1), with 34% within 1-3 months, 23% within 3-12 months and 18% over one year. Professional delay from primary care referral to first being seen by an Aintree hospital specialist (Table 1) was more than 14 days for 11% (42/388), with a median (IQR) overall of 9 (7-13) days and a median (range) of 20 (15-43) days for those delayed more than 14 days. In 20 of the 42 delayed cases either patient cancellation or patient DNA was stated as the reason for the delay. The

remainder reflected lack of clinic capacity. A swelling or lump indicated a greater likelihood of presentation within 30 days ($p=0.001$). Otherwise there were no statistically significant associations, though there were trends towards earlier presentation for those who had never smoked and for those who lived in the most deprived quintile of neighbourhoods. There were also trends suggesting later presentation by patients with hoarseness or a sore throat, alcohol consumption of over 40 units a week and older age (>75 years). There were no notable associations between patient factors and professional delays of more than 14 days (Table 1) nor between patient delay and professional delay (results not shown).

The outcome of referral was known for 389 patients with one patient demise during the referral process. 28 (7.2%) were diagnosed with cancer (Table 2), 95% confidence interval 4.8%-10.2%. Patients referred by GPs were more likely to have cancer than patients referred by HCs ($p=0.02$). An increased alcohol intake was associated with having cancer ($p=0.02$) and there were non-significant trends in regard to smokers being more likely to have cancer and for those with symptoms of hoarseness being less likely to have cancer. Also, of borderline significance was that twice as many males (10.3%) had cancer than females (5.2%). There was also a trend observed in regard to IMD deprivation with cancer rates being 17% (4/23) for referrals living in the least deprived quintile of neighbourhoods, 10% (2/20), 9% (4/46), 5% (3/58) and 6% (14/234) for progressively more deprived quintile neighbourhoods, $p=0.25$. The numbers living in the lesser deprived quintiles are small and when aggregated together their rate (8.8%) was higher but not significantly different ($p=0.31$) from those living in the most deprived quintile (6.0%).

All but one of the referrals from GDPs were to the MFU. There was a trend observed in regard to IMD deprivation and source of referral, the percentage referred by a GDP being 17% (4/23) for the least deprived quintile of neighbourhoods, 15% (3/20), 7% (3/46), 3% (2/58) and 5% (11/235) for more deprived quintile neighbourhoods, $p=0.05$. The smaller numbers when aggregated gave a rate (8.2%) that was not significantly different ($p=0.19$) from that of the most deprived quintile (4.7%). Finally, there were several significant associations with patient symptoms (Table 3).

Discussion

It is useful to explore the referral pattern of suspected HNC by SES as there is a substantial NHS resource given to early diagnosis yet the pick-up rate of actual cancers from the urgent pathway is quite low. ² This audit reflects current practice in a geographical area where there are high numbers of patients of lower SES. ^{3,4} The number of patients referred over a three month was sufficient to identify some meaningful results and the audit addresses both ENT and MFU (HNC referrals). It is acknowledged there are inherent limitations in this study notably the single hospital and its catchment population, which is not necessarily representative of the national case-mix. The information on symptoms and delay will be imprecise given the proforma used but does provide a useful indication. Although the IMD is a recognised measure of deprivation it is not necessarily specific at an individual patient level.

In this audit there was a predominance of patients with relatively low risk of cancer, i.e. females, non-smokers and low alcohol consumers. The gender

balance was unexpected since head and neck cancers are twice as common in men than women. There are many possible explanations for this as across all UK general practices in 2010, the crude consultation rate was 32% lower in men than women and these differences were higher in people from more deprived areas. ⁷ Whilst this study looked at all GP consultations and not specifically those for HNC, it does suggest that men prioritise their health less than women.

The conversion rate was 7.2%, consistent with the review by Langton ² and implies demand on NHS resources in term of clinic time and also the anxiety of the 'worried well'. These patients may have been referred by their GP/ GDP mainly for reassurance rather than high clinical suspicion of HNC. It is recognised that urgent referrals for suspected cancer can vary threefold among general practices.⁸ It is likely that GP's will be mindful that deprivation is correlated to risk factors for HNC such as smoking and drinking; they may therefore be more cautious of missing a HNC and be more likely to refer for this reason. A majority (62%) of the referral sample lived in the most deprived quintile of residential neighbourhoods in England; this contrasts to the 37% of HNC patients treated at Aintree 2008-2012 that lived in the most deprived quartile of English neighbourhoods (Rylands 2016). ⁹

The finding that patients from more deprived neighbourhoods are less likely to be referred by a GDP might indicate a lower registration rate with a GDP.¹⁰ Cost and access to NHS dental care might act as deterrents. In our audit there were significant differences in the rates of cancer between patients from the GP (6.3%) and GDP (20.4%). There are several potential explanations for this which need further investigation but it probably reflects that it is simpler to

assess oral symptoms and examine the mouth, compared to other sites in the head and neck region.

Consideration should be given to ways to improve the appropriateness of the suspected HNC referral for example improved education and referrals including photographs.¹¹ Although a small survey, Bethell and Leftwick¹² found that general practitioners tended to have never attended training on referrals in this specialty and felt that the two-week wait system could be improved. The main areas for further work are development of pre-referral communication between primary and secondary care along with development of practical educational measures for general practitioners. A potentially valuable resource for both professional and patients is the Cancer Research UK toolkit however this guidance focuses solely on oral cavity.¹³ It has been argued that linkage between GPs and GDPs to help improve the assessment of suspected HNC might further increase delays since the patients at highest risk of HNC are the least likely to go to a GDP and also the time taken by both primary care providers would add to the hold-up.¹⁴ Further research is needed as processes could be streamlined to avoid any delays, and certainly for oral cavity lesions GPs could be substantially assisted by a second opinion from the local dentist. In addition, education and awareness, particularly for deprived areas needs to be put into place to allow for better detection of malignant signs and symptoms. Professionals should also keep their knowledge up to date and aim to educate their patients about signs and symptoms for cancer to allow for earlier detection and hence better outcomes.

In conclusion lower SES is associated with a higher number of suspected HNC referrals. However, those referred overall tend not to represent those

most likely to be at risk of HNC in terms of gender, smoking and alcohol history. Given the large number of referrals from the lower SES groups, more research is needed to explore how to reduce the numbers of ‘worried well’ and streamline the referral process.

Conflict of interest statement

We have no conflicts of interest.

Ethics statement/confirmation of patient’s permission

The data, which had been collected as part of a service audit rather than for research, met the criteria of the local Clinical Governance Department for service evaluation.

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