An Analysis of Waiting Times in 62 Patients with Differentiated Thyroid Cancer

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Introduction

Scottish Government guidelines state that 95% of patients diagnosed with cancer should begin treatment within 31 days of diagnosis and 95% of those referred with a suspicion of cancer should begin treatment within 62 days of referral (1). However, these targets currently apply to 10 major cancer groups, which excludes thyroid cancer (1). The biology of differentiated thyroid cancer (DTC) is favourable in comparison to most malignancies. However, the oncological and psychological impact of potential treatment delays in DTC is not clear. The aim of this study was to assess times from referral to diagnosis and treatment, with a focus on factors that influence times within our cancer network.

Patients and Methodology

Review of prospectively maintained MDT minutes between January 2016 to September 2018 identified 153 potentially suitable patients in NHS Lothian with a diagnosis of DTC. These patients were reviewed and a significant number of exclusions were made.

One patient (1%) had MEN2a, 32 (21%) were referred within secondary care and 24 (16%) were recurrent disease. These patients were then excluded. Of the remaining 96 patients, 34 (35%) were incidental tumours and the remaining 62 (65%) patients were referred by a General Practitioner (GP) and diagnosed with a new DTC. These 62 patients were included in the study. Results are recorded as medians (range) unless otherwise indicated.

Data collected included patient demographics, tumour stage and histology, pre-surgical fine needle aspiration (FNA) results and urgency of primary care referral. T-Tests or Chi-Squared tests of significance were performed using SPSS (Statistical Package for the Social Sciences, Version 24) for between-group differences.

Results

The median age of the cohort was 47 years (range 17-87y). Of the patients, 20 were male and 42 female, approximately the 1:2 ratio typical of DTC populations in Scotland (2). Only one patient (2%) died and one patient (2%) did not undergo surgery but was managed with palliative radiotherapy.

Of the 62 non-incidental patients, 47 (76%) had papillary carcinoma, 12 (19%) had follicular carcinoma, two (3%) had foci of anaplastic carcinoma and one (2%) had areas of both papillary and follicular carcinoma.

In terms of waiting times for diagnosis and management, there was no significant difference between patients referred by General Practitioners (GP) on the 'urgent suspicion of cancer' pathway (median 114d and 111d) and those referred routinely (median 135d (P=0.39)) and 133d (p=0.26)), or under the urgent, non-cancer referral pathway (median 133d (p=0.37) and 181d (P=0.27)) (Table 1). Despite this, there was a trend for more rapid management of urgent referrals.

All patients underwent pre-treatment fine needle aspiration or core needle biopsy. Within the cohort, patients were grouped according to whether they had a suspicious (Thy4) or diagnostic FNA (Thy5) [Group 1] (35 patients, 56%), or a non-diagnostic (Thy1), benign (Thy2) or indeterminate (Thy3a/Thy3f) FNA [Group 2] (27 patients, 44%).

Patients in Group 1 were diagnosed more expeditiously than those in Group 2 (129d (1-463) vs 204d (65-777), p<0.0005). The time from referral to treatment of the patients in Group 1 (127d (47-442)) was also quicker than that of the patients in Group 2 (182d (54-754), p=0.022).

Within these groups, there were significant (p=<0.0005) differences in tumour characteristics (Table 3). Most notably, there was an increased proportion of papillary cancers, N1 and M1 disease in Group 2 compared with Group 1 (Table 2). There was no significant difference in age between the 2 cohorts (p=0.31).

With a median follow up of 33 months, only one patient has died to date.

Discussion

When the suspicion of cancer is raised, it is a time of stress and anxiety for patients and their families (3). The cancer waiting times targets have been introduced to support diagnosis and treatment delivery in Scotland (1). Although 10 major cancers are included in these times, currently thyroid cancer is not (1). This is despite the fact that the lifetime risk in women is similar to liver and oral cancers, both of which are included (1, 4). In addition, global incidence of DTC is increasing (5).

In contrast to most malignancies, patients diagnosed with DTC generally have an excellent prognosis, with survival exceeding 90% at 10 years (6). Despite the favourable disease biology, the level of psychological distress suffered by patients diagnosed with DTC is similar to that of malignancies with much worse prognoses (3).

Few groups have looked at waiting times in DTC cohorts. To date, no effect of treatment delay on mortality has been established. Although diagnostic status of the cohort prior to thyroidectomy in most studies is unclear, they show variation in the time to treatment following DTC diagnosis from 15.3 days (7) to 114 days (8). This is likely due to discrepancies in resource availability and differences in departmental approaches.

One centre in England, where thyroid cancer is subject to 'two-week-wait' outpatient review targets, recorded 100% attainment (10). Interestingly, only 7% of these two-week-wait referrals resulted in a thyroid cancer diagnosis. When combining this pattern of diagnostic yield with excellent oncological outcomes, it may be the case that the application of waiting time targets in Scotland has negative repercussions for the broader cancer population while offering little benefit for the DTC cohort.

Classical cancer pathways include: a symptomatic presentation; pre-diagnostic testing; a point of diagnosis and staging; treatment planning; treatment and follow up. Our results confirm the fact that DTC is often found incidentally (22%). In these cases, the suspicion of cancer is only raised after the initial surgery performed for a benign indication. Clearly, in this situation, cancer target times are inappropriate.

Of the 62 patients in our study who were referred with a mass which ultimately proved to be a DTC (non-incidental) only 24 were referred on the cancer pathway (39%). A similar percentage of patients were referred from primary care as 'routine' (27%), 'urgent' (34%) and 'urgent - suspicion of cancer' (39%). This suggests uncertainty within primary care regarding how to refer such cases, although there was a no effect of the referral priority on time to diagnosis and treatment. It is also likely that more prominent clinical signs are associated with more advanced disease. In particular, 56% of our cohort who had a pre-operative biopsy suggestive or diagnostic of malignancy had N1 disease. Such patients are likely to be triaged to treatment with more urgency given the stage of disease.

In our unit, a significant number of the non-incidental patients did not have a diagnosis or suspicious FNA at the point of first treatment (44%). For these patients, the time from diagnosis to treatment is actually negative. Again, the cancer waiting time model is not well suited to this group.

Our results highlight the impact that a pre-operative cytological diagnosis has on a patient's pathway, with surgeons clearly prioritising such cases. This observation confirms the importance of accurate radiological and cytological assessment in overall treatment planning.

This study is limited by low numbers and the inability to identify all patients referred with a suspected thyroid mass. This prevented us from calculating the percentage of referrals which result in a cancer diagnosis.

Our study suggests that the overall cancer time model is not well suited to DTC. 64% of patients referred from primary care were either identified incidentally or following a diagnostic procedure which actually amounted to initial therapy.

Although the biology of DTC is such that the time to treatment does not appear to impact on oncological outcomes, the psychological impact is less clear. Long waiting times from referral to diagnosis introduce uncertainty, nervousness and worry for patients and their families (3). This is true both for patients who ultimately are diagnosed with malignancy but also for those who are investigated and have confirmation of benign disease. This potential distress may reduce after surgery (3).

Given the difficulty in differentiating patients with DTC from those with either benign disease, or in the setting of nodal disease, from other malignancies, it seems reasonable to recommend that those patients with rapidly enlarging thyroid nodules, metastatic nodes, those at elevated risk of malignancy (prior radiation or family history) or those with additional risk factors should be offered rapid review in secondary care. Not only does this offer the potential to make a swift diagnosis, but allows the patient access to a healthcare professional with experience in management of this condition with whom the prognosis can be discussed. The importance of appropriate referral from primary care and accurate pre-operative cytology is clear, as both factors significantly impact the time to diagnosis and treatment.

Conclusion

DTC does not lend itself well to cancer treatment time assessment. Those patients who are pre-operatively diagnosed with malignancy are dealt with more swiftly than those who are not. Clinicians involved in the investigation and management of patients referred for investigation of potential thyroid cancer should balance the resource implications of achieving a timely diagnosis against the minimal impact this has on oncological outcome but the potential for significant psychological harm.

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