Excising squamous cell carcinomas: comparing the performance of GPs, hospital skin specialists and other hospital specialists

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Background. GPs have no defined role in the excision of squamous cell carcinomas (SCCs). Current guidelines recommend that all skin lesions suspicious of SCC should be referred urgently to secondary care. Evidence regarding current management of SCC in primary care is limited. Existing audit data suggest that up to 10% of SCCs may be excised in primary care. GPs may be able to have a greater role in the management of SCC but more evidence is required before this can be advocated.

Objective. To compare the practice of GPs, skin specialists (dermatologists and plastic surgeons) and other hospital specialists in excising SCCs.

Methods. A retrospective analysis of all SCCs excised in the Grampian region between 1 January and 31 December 2005. A total of 1184 reports were rated for source and adequacy of excision.

Results. GPs excised 23.7% of all SCC-positive biopsies. Whether the biopsy had been performed by a GP or a hospital skin specialist made no significant difference to excision adequacy. However, GPs were significantly more likely to excise adequately than hospital non-specialists (P < 0.001). Infrequent GP excisers appear to perform as well as frequent excisers in adequately excising SCCs.

Conclusions. GPs excise a considerable number of SCCs in primary care. GPs compare favourably to skin specialists in excising SCCs. The performance of infrequent GP excisers does not appear to differ significantly from that of frequent GP excisers. Further work is required to define more clearly the role of GPs in the management of SCCs.

Keywords. Cancer, diagnosis, primary health care, skin cancer, squamous cell carcinoma.

Introduction

Squamous cell carcinoma (SCC) is the second most common skin malignancy after basal cell carcinoma (BCC), and its incidence is steadily increasing worldwide. The majority of cases in the UK present in primary care and prognosis depends on accurate diagnosis and appropriate treatment. Most SCCs are low risk, however, some do metastasize resulting in over 400 deaths in the UK per year. Thus, correct diagnosis and adequate treatment are paramount. The treatment of choice is complete surgical excision usually carried out as a minor surgical procedure. Excision is performed in both primary and secondary care, with up to 10% of SCCs being excised by GPs. Despite this, current guidelines do not identify a role for GPs in the excision of SCC and instead recommend referral of all patients with any suspected skin cancer to specialist services or secondary care.

The management, namely the diagnosis and treatment, of non-melanoma skin cancer (NMSC) places a significant workload on primary and secondary care services. Given the increases in incidence, it may become increasingly burdensome to secondary care to independently manage skin cancer, especially the primary biopsy of all suspicious skin lesions. The National Health Service is currently committed to shifting the balance of care from secondary care to primary care in order to reduce costs and provide locally accessible services. However, there is concern that...
Methods

Sample
A retrospective analysis was conducted of all (n = 1184) positive cutaneous SCC reports issued from the Department of Pathology, University of Aberdeen, during a 12-month period between 1 January and 31 December 2005. We did not analyse any non-coetaneous SCC reports. All anonymized pathology reports were then rated by two researchers who were blinded as to the source of the specimen (GP or secondary care) (EKD and LD). A sample (94 reports) was rated by both and analysed to determine inter-rater reliability.

Rating of reports
Biopsy type (excision, incision, punch, shave or curettage or unclear) and site were noted. Excision tends to involve the entire removal of a skin lesion usually performed with the intention to treat. Incision, punch, shave or curettage tend to involve removal of some of the lesion for the purpose of diagnosis rather than treatment. Adequacy of excision was determined by conventional histological examination as recommended by guidelines. Biopsies were rated adequate if the excision was reported by the pathologist as completely excised with no margin involvement and inadequate otherwise.

Data handling
A copy of all positive SCC pathology reports from 1 January 2005 until 31 December 2005 was provided to the researchers by the data manager at the Department of Pathology, Aberdeen Royal Infirmary. Any patient identifiable data were removed prior to the researchers receiving the reports. All 1184 reports were scrutinized then by EKD and LD. Clinical data were abstracted onto a Microsoft Access form. Data collected included date of birth, sex of patient, type of biopsy, site and adequacy of excision. Once all reports had been scrutinized, data on the source of the biopsy were included and data processed accordingly. Submitting operators were classed as skin specialists (dermatologists and plastic surgeons); other hospital specialists (ophthalmologists, ENT surgeons, maxillofacial surgeons, general surgeons, gynaecologists, A+E specialists and physicians) and GPs. Among the GPs, the 80 submitting <10 samples were classed as infrequent excisers and the remaining frequent excisers. Data were then transported into SPSS 18.0 for analysis.

Statistical analysis
Analyses were conducted using SPSS (version 18.0; SPSS Inc., Chicago, IL). Mean age of patients across practitioner type (GP, dermatologist, plastic surgeon or other hospital specialist) was compared using analysis of variance. Anatomical site by practitioner was analysed using the chi-square test. The chi-square test was also used to explore proportions of practitioners by description of site, abstract adequacy and excision completeness.

The performances of GPs and other hospital specialists, and frequent versus infrequent GP excisers, with respect to completeness of biopsy excision, were compared using the chi-square test. Multivariate logistic regression was used to examine excision adequacy between GPs and non-GPs and between frequent and infrequent GP excisers following adjustment for patient sex and age and biopsy site. Only excisional biopsies were included when examining excision adequacy using the logistic regression model. A total of 94 reports (~8%) were rated by both observers and interobserver agreement was assessed using Cohen’s kappa statistic (K).

Results

Process data
During 2005, a total of 1184 SCCs were excised from 1181 patients (660, 55.7% males and 521, 44.0% females) with a mean age of 78.4 years (SD 194, 29.1%). Of these 1184 SCC-positive biopsies, 281 (23.7%) were performed by GPs, 208 (17.6%) by dermatologists, 509 (43.0%) by plastic surgeons and 186 (15.7%) by other hospital specialists. A total of 90 GPs excised SCCs. Of these, 10 GPs who submitted ≥10 samples were subsequently classed as frequent excisers and 80 who submitted <10 samples classed as infrequent excisers.

Demographic factors of the patient population
GPs tended to treat younger patients (P = 0.001) than either skin specialists or other hospital specialists. They also tended to treat more females (P < 0.001) (Table 1).
Type of biopsy
A total of 900 (76.0%) were excisional biopsies, 66 (5.6%) were incisional biopsies, 160 (13.5%) were punch biopsies and 27 (2.3%) were shave excisions (Table 2). In 31 (2.6%) of cases, biopsy type could not be determined. The proportions of biopsy types were similar among operators except dermatologists who performed a larger proportion of punch biopsies.

Biopsy site
Overall, most biopsies were excised from the head or neck region (47.3%) and constituted 40.9% of all excision lesions performed by GPs, 40.4% by dermatologists, 63.1% by plastic surgeons and 59.7% by other hospital specialists (Table 3). Interobserver agreement of biopsy site was excellent ($K = 1.00$, $P < 0.0001$).

Univariate analysis
Clinical performance. GPs completely excised the lesion in 177/207 (85.5%) compared to 62/72 (86.1%) for dermatologists, 386/443 (87.1%) for plastic surgeons but the proportion was lower 112/158 (70.9%) for other hospital specialists ($P < 0.001$) (Table 4). Interobserver agreement for clinical performance was very good ($K = 0.789$, $P < 0.001$).

Multivariate analysis
GP versus hospital skin specialists. After adjustment for patients’ sex and age and biopsy site, whether it was a GP or a hospital skin specialist made no significant difference to excision adequacy [odds ratio (OR) 0.84, 95% confidence interval (CI) 0.47–1.27].

GPs versus other hospital specialists. GPs were significantly more likely to excise adequately than hospital non-specialists (OR 2.13, 95% CI 1.23–3.72).

Frequent and infrequent GP excisers. There were no significant differences between frequent and infrequent GP excisers in excision adequacy (OR 0.93, 95% CI 0.41–2.10).

Discussion

Summary of main findings
In 2005, of the 1184 SCC-positive biopsies reported in Aberdeen, 23.7% were excised by GPs, 17.6% by dermatologists, 43.0% by plastic surgeons and 15.7% by other hospital specialists. Patients managed by GPs were generally younger and more likely to be female. After adjustment for patient gender, age and biopsy site, whether the biopsy was excised by a GP or

Table 1  Demographic factors of patient population

<table>
<thead>
<tr>
<th>Patient factors</th>
<th>GP</th>
<th>Dermatologist</th>
<th>Plastic surgeon</th>
<th>Other hospital specialist</th>
<th>Chi-square (P-value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age [mean (SD)]</td>
<td>75.6 (11.6)</td>
<td>76.9 (11.2)</td>
<td>78.9 (10.9)</td>
<td>78.1 (12.6)</td>
<td>0.001</td>
</tr>
<tr>
<td>Sex (% male)</td>
<td>125 (44.5)</td>
<td>51.9</td>
<td>107 (64.2)</td>
<td>102 (54.8)</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

Table 2  Type of biopsy

<table>
<thead>
<tr>
<th>Biopsy type</th>
<th>GP</th>
<th>Dermatologist</th>
<th>Plastic surgeon</th>
<th>Other hospital specialist</th>
<th>Total</th>
<th>Chi-square (P-value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excisional, n (%)</td>
<td>216 (76.9)</td>
<td>74 (35.6)</td>
<td>450 (88.4)</td>
<td>160 (86.0)</td>
<td>900</td>
<td></td>
</tr>
<tr>
<td>Incisional, n (%)</td>
<td>7 (2.5)</td>
<td>14 (6.7)</td>
<td>31 (6.1)</td>
<td>14 (7.5)</td>
<td>66</td>
<td></td>
</tr>
<tr>
<td>Punch, n (%)</td>
<td>43 (15.3)</td>
<td>98 (47.1)</td>
<td>14 (2.7)</td>
<td>5 (2.7)</td>
<td>160</td>
<td></td>
</tr>
<tr>
<td>Shave/curettage, n (%)</td>
<td>10 (3.6)</td>
<td>12 (5.8)</td>
<td>5 (1.0)</td>
<td>0</td>
<td>27</td>
<td></td>
</tr>
<tr>
<td>Unclear, n (%)</td>
<td>5 (1.7)</td>
<td>10 (4.8)</td>
<td>9 (1.8)</td>
<td>7 (3.8)</td>
<td>31</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

Table 3  Site of biopsies

<table>
<thead>
<tr>
<th>Site</th>
<th>GP</th>
<th>Dermatologist</th>
<th>Plastic surgeon</th>
<th>Other hospital specialist</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head and neck, N (% of total for specialty)*</td>
<td>115 (40.9)</td>
<td>84 (40.4)</td>
<td>321 (63.1)</td>
<td>111 (59.7)</td>
</tr>
<tr>
<td>Back or shoulder, N (% of total for specialty)*</td>
<td>19 (6.8)</td>
<td>5 (2.4)</td>
<td>5 (1.0)</td>
<td>3 (1.6)</td>
</tr>
<tr>
<td>Trunk, N (% of total for specialty)*</td>
<td>7 (2.5)</td>
<td>8 (3.8)</td>
<td>9 (1.8)</td>
<td>10 (5.4)</td>
</tr>
<tr>
<td>Lower limb, N (% of total for specialty)*</td>
<td>68 (24.2)</td>
<td>70 (33.7)</td>
<td>82 (16.1)</td>
<td>34 (18.3)</td>
</tr>
<tr>
<td>Upper limb, N (% of total for specialty)*</td>
<td>68 (24.2)</td>
<td>33 (15.9)</td>
<td>85 (16.7)</td>
<td>27 (14.5)</td>
</tr>
<tr>
<td>Total biopsies</td>
<td>281</td>
<td>208</td>
<td>509</td>
<td>186</td>
</tr>
</tbody>
</table>

*Includes all biopsies (excisional, incisional, punch, shave or curettage, unclear).
a hospital skin specialist made no significant difference in terms of excision adequacy. However, GPs were significantly more likely to excise adequately than hospital non-specialists (OR 2.13, 95% CI 1.23–3.72). There were no significant differences between frequent and infrequent GP excisers in excision adequacy.

**Strengths and limitations**

This was a simple retrospective observational study which could be readily repeated and replicated in other areas. The researchers were blinded as to the source of the biopsy thereby eliminating a major source of potential bias from earlier studies. As far as we are aware, this is one of the largest studies to date which has compared the relative performance of surgery for SCC between primary and secondary care, an issue highlighted with a need to explore. The main limitation of this study is that the data are from 6 years ago (2005). Nevertheless, we are not aware of any substantial change of practice with respect to SCC in the UK in recent years and we strongly believe our data remain important and relevant. We did not collect data on whether or not an SCC was suspected on the request form to pathology. The majority of request forms contained only an anatomical description of the lesion and no suspected diagnosis so we did not record this. We also have no data on referral pathways but can only speculate that lesions sent by dermatology or plastic surgery had been referred originally by a GP on suspicion of cancer or diagnostic uncertainty. Neither were we able to determine if any lesions were discarded by a surgeon and not sent to pathology for diagnosis. Only patient age and sex were retrieved from the anonymized pathology reports. We could therefore not determine other patient risk factors for SCC which is a further limitation of the study. The other main limitation is that we were unable to determine the grade of hospital doctor performing the excisions in each specialty perhaps biasing the study in favour of primary care. However, previous studies on NMSCs show that there is no significant difference between incomplete excision rates and the grade of specialty doctor. Although we did not obtain data on width or size of the surgical specimen, it is likely that GPs excised smaller and simpler lesions, referring more complicated lesions to secondary care. The results do show that plastic surgeons (63.1%) and other hospital specialists (59.7%) excised more lesions from the head and neck area than GPs (40.9%). However, the percentage by GPs was similar to the number of head and neck lesions excised by dermatologists (40.4%).

**Context**

Previous studies suggest GPs excise up to 10% of SCC, whereas this study showed a higher rate of 23.8%. This may reflect regional differences with a higher proportion of rural GP practices in North East Scotland where GPs may be more likely to carry out surgical procedures than their city counterparts. It may also reflect the increased rates of minor surgery by GPs since the introduction of the new GP contract in 2003 in the UK. We found that GPs excise SCCs adequately as often as hospital skin specialists and more often than other hospital specialists which does not support current guidelines that discourage GPs from tackling suspicious skin lesions. Such guidelines are, however, based on mostly observational studies of variable quality and generally smaller size. On the other hand, our results accord with another British study showing that the incomplete excision rate of expert GPs is comparable with secondary care incomplete excision rates. This study was not specific for SCC and incomplete excision rates were self-reported by GPs rather than by pathology reports. A recent UK study, a randomized controlled equivalence trial of minor surgery in primary and secondary care settings, is, to our knowledge, the only randomized study found in this area. Although a much criticized study, it concluded that patients prefer minor surgery procedures to be carried out in primary care and although the quality of minor surgery is lower in primary care, the difference is not large. Simulated cost data showed primary care less cost-effective, but the authors admitted that a high degree of uncertainty surrounds the true mean cost of minor surgery in both settings when using simulated values.

**Implications**

Our findings show that GPs performed similarly to hospital specialists in excising SCCs. However, GPs did tend to excise lesions on more younger patients and more females thus perhaps reflecting a lower suspicion for SCC. We did not record any presumptive diagnosis given on the pathology request forms because most did not include this. We also found no significant difference in the performance of frequent and
infrequent GP excisers which is concerning and could highlight weaknesses in the current training of GPs with a special interest in minor surgery. Thus, do GPs need to have a higher level of suspicion for SCC? Should they do less excisions and refer more lesions to secondary care, even in patients regarded as low risk? Do GPs who perform minor surgery require further and ongoing structured training, especially in diagnosing skin lesions, forging closer links with specialists? As the burden of NMSC increases, it is timely to re-evaluate the role of GPs in the management of SCCs. Further robust work is required to determine the current quality of skin cancer management in primary care and our study should be replicated—this could be done easily throughout the UK. Current guidelines perhaps need rethought against the backdrop of increasing skin cancer incidence.

Conclusions

A substantial number of SCCs are excised in the community by GPs.

GP s perform favourably with skin specialists when excising SCCs.

A structured request form could improve clinical abstract quality given to pathologists along with biopsies. The role of GPs in the management of SCCs requires review and consideration.

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Declaration

Funding: none.

Ethical approval: Advice was sought from the Chair of the North of Scotland Research Ethics Committee and ethical approval was not required.

Conflict of interest: all authors declare that the answer to the questions on your competing interest form are all no and therefore have nothing to declare.

References


