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Main Article

Parotid lymphoma in west Scotland: two-year 'snapshot' of diagnosis, management and core issues

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Abstract

Objectives: To establish whether there is a requirement for a network policy on management of suspected intraparotid lymphoma, and to answer the question, 'Can lymphoma of the parotid region be adequately diagnosed, typed and treated on the basis of a core biopsy, within the West of Scotland?'

Method: We identified 22 patients from the West of Scotland Managed Clinical Network database who had been diagnosed between 2003 and 2005 with lymphoma of the parotid region (nodal or extranodal). These 22 cases were reviewed, assessing specifically their investigation and diagnosis (compared with the World Health Organization classification of parotid lymphoma).

Results: Three of the 22 patients underwent core biopsy to diagnose and type their lymphoma. All these procedures were performed within a single centre.

Conclusion: It is possible to successfully perform core biopsy of parotid lymphoma lesions (generally under ultrasonic guidance). This may obviate the need for open procedures. Close collaboration with haematology, pathology, radiology, and head and neck colleagues is required.

Key words: Parotid Neoplasms; Biopsy; Lymphoma

Introduction

Otolaryngologists and head and neck surgeons are familiar with the diagnosis and investigation of lymphoma, as this commonly presents within the head and neck. However, malignant lymphoma of the parotid gland is relatively rare. A 15-year review at the MD Anderson Cancer Center found that lymphoma accounted for under 10 per cent of all new malignant parotid neoplasms, despite the fact that 70–80 per cent of all salivary gland neoplasms arise within the parotid.[1]

Approximately 25 per cent of all extranodal lymphomas occur in the head and neck, and parotid lymphoma accounts for 5 per cent of extranodal lymphoma cases.[2,3] The majority of lymphomas arising in the parotid are B cell in nature, with T cell lymphoma rarely reported.[4] The B cell lymphomas are associated with autoimmune conditions such as Sjögren's syndrome.[5]

The presentation of parotid neoplasms is varied and, whilst pain and nerve palsies may be a feature, these tumours frequently present with painless swelling. There may be coexisting lymphadenopathy of the cervical region – one in five parotid lymphomas will have associated cervical lymphadenopathy. The lymphoma itself can arise from the salivary parenchymal tissue or from a lymph node within the parotid gland. In practice, it is frequently impossible to discriminate between these two types.[6] Indeed, the Scotland and Newcastle Lymphoma Group, in reporting their population-based study, recommended the term 'lymphoma primarily affecting the parotid gland' to refer to lymphoma of the parotid region.[7]

Lymphoma of the parotid gland is well treated with primary radiotherapy and chemotherapy, and indeed may be managed with a policy of 'watchful waiting'. For this reason, it is important to identify parotid lymphoma and to distinguish it from other salivary gland pathology for which the primary treatment modality may be surgery. It is particularly important to distinguish parotid gland lymphoma from the main malignant differential diagnosis in the head and neck, squamous cell carcinoma.[8] Open incisional or excisional biopsy of neck lumps containing squamous cell carcinoma is widely thought to increase local recurrence – hence the reluctance of head and neck surgeons to excise nodes without a prior attempt at fine needle aspiration cytology, often to the frustration of haematology and histopathology colleagues.[9] Even benign salivary gland lesions such as pleomorphic salivary adenoma

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require careful and judicious biopsy. Incomplete excision may necessitate lifelong follow up, radiotherapy and/or difficult revision surgery; at all times, the surgeon should be aware of the risk of malignant transformation.[10]

The 2008 British Committee for Standards in Haematology guideline 'Best practice in lymphoma diagnosis and reporting' recommends that fine needle aspiration samples should not normally be used as the sole tissue for diagnosis.[11] This guideline also states that the number of pathological tests needed for the precise diagnosis and classification of haematological malignancies means that whole lymph node samples are preferred, rather than needle cores or fine needle aspiration cytology (FNAC) samples.

However, it is possible to type lymphoma using FNAC, and core biopsy is increasingly being used to diagnose lymphoma of the head and neck and indeed the parotid, without the need for traditional biopsy.[12] In their 2004 review, the Scotland and Newcastle Lymphoma Group recommended that more importance be attached to FNAC in the diagnosis of lymphoma, in the context of experienced operators and haematopathologists.[7]

Surgery in the parotid region carries the risk of morbidity. The facial nerve is particularly at risk (as it is, of course, in the case of untreated parotid malignancy). Other complications include Frey's syndrome, haematoma and scarring. Indeed, there is an argument that surgical treatment of parotid lymphoma may place patients at increased risk of complication, due to the diffuse, infiltrative nature of the disease.[13]

Therefore, clinicians should be able to justify why a particular diagnostic technique is used, and be prepared to modify local protocols as dictated by service availability. The timely diagnosis and treatment of malignancy has always been of paramount importance to both patient and clinician alike. However, the implementation in the UK of 62 day treatment guarantees (whereby no patient referred urgently for suspected cancer should wait more than 62 days from referral to start of first treatment) has further motivated care providers to identify ways in which their service could be streamlined. Such changes reflect a commendable shared aspiration to improve patient care; however, the penalties associated with failure to meet these targets have further focussed the collective mind of National Health Service managers. As a consequence, it may be easier to obtain a slot for ultrasound guided core biopsy than a theatre slot for open parotid surgery. Core biopsy may obviate the need for, and the cost of, the general anaesthesia which many surgeons would prefer for open biopsy. Whilst these factors should not be the primary consideration in selecting the technique used for tissue sampling, in practice they do influence clinicians and managers.

Materials and methods

We aimed to perform a retrospective review of practice within our network area, looking at the diagnosis and treatment of lymphoma of the parotid region. In particular, we hoped to answer the clinical question, 'Can lymphoma of the parotid region be adequately diagnosed, typed and treated on the basis of a core biopsy, within the West of Scotland?' Our region covered a wide geographical area, with areas of significant social deprivation. A retrospective analysis was undertaken using data from the West of Scotland Haematological Cancer Audit database. Permission was sought from the consultant haematologists directly involved in the relevant patients' care, and from the West of Scotland Managed Clinical Network. Ethical approval was not required.

Twenty-two patients were identified as having received a diagnosis of lymphoma of the parotid region, between December 2003 and December 2005. A total of 948 patients were diagnosed with lymphoma within the West of Scotland in that two-year period. Locally held case records were requested. These data were supplemented and cross-referenced with those held on the lymphoma database. Within the West of Scotland, there is a group of designated lymphoma pathologists which reviews all new cases of lymphoma. New cases are discussed by local multidisciplinary teams, and regional discussion is facilitated by a well established teleconferencing facility.

Results and analysis

Demographics and referral patterns

Of the 22 patients identified, 12 were male and 10 female. Mean age at presentation was 62 years (range 19–88 years). The commonest route of referral was from a general practitioner (Table I), and the commonest reason was a painless lump. Patients were referred to, or self-presented to, the West of Scotland or Forth Valley centres, as shown in Table II. The first hospital specialty seen was (in descending order of frequency): ENT (10 cases); oral and maxillofacial surgery (five); general surgery (three); geriatrics (two); accident and emergency (subsequently referred to ENT) (one); and neurosurgery (one). The predominance of ENT surgeons reflected the availability of neck lump clinics and well established referral pathways. Some patients

TABLE I

PAROTID LYMPHOMA REFERRALS BY SOURCE AND PRIORITY

Referral	Pts (*n*)
Source	
GP	16
A&E self-presentation	2
Incidental finding	2
General dental practitioner	2
Priority	
Urgent	5
Soon	3
Routine	6
Not GP referral	4
Unknown	4

GP = general practitioner; A&E = accident and emergency department

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TABLE II

SOURCE HOSPITAL

Hospital	Cases (*n*)
Dumfries and Galloway	2
Crosshouse	4
Southern General	2
Hairmyres	1
Ayr	1
Wishaw	2
Gartnavel General	1
Falkirk	4
Glasgow Royal Infirmary	3
Victoria	1
Stirling	1

presented in old age with indolent disease to geriatricians.

Disappointingly but perhaps unsurprisingly, with patients being seen by such a heterogeneous group of specialties prior to haematological input, there was significant variation in time to treatment (Table III), with some delays which would undoubtedly be considered unacceptable, particularly in the current era of cancer targets. However, it is worth noting that, in this cohort of patients, one-third (seven of 22) were ultimately managed with an expectant policy of watchful waiting; thus, no active treatment was delayed in this subset.

Tissue sampling

Various techniques were used to obtain tissue for histological examination (Table IV). Only one centre utilised ultrasound-guided core biopsy as the primary method of tissue sampling, and this technique was used for all cases of parotid region lymphoma. In other centres, various methods of incisional and excisional biopsy were employed – the common factor being a surgical incision. Some patients underwent formal parotidectomy to obtain tissue.

All the discrete parotid region lymph nodes (11 of 22) from which lymphoma was typed were obtained by excisional biopsy (Table V). Of note, all three core biopsy specimens were described as containing parotid parenchymal lymphoma.

TABLE III

TIME TO TREATMENT

Time from referral to:		Reason for delay
First seen (days)	Treatment (days)	
8	57	None
34	245	Routine referral to other specialty
15	106	None
20	50	None
30	Unknown	None
46	112	Routine referral to other specialty
33	152	Staging & further investigations
28	293	Staging & further investigations
13	554	Initial referral lost; referred again
36	146	Staging
28	313	Comorbidity
0	56	None
0	103	Referred outside trust
Unknown	Unknown	Unknown
0	111	Routine referral to other clinician
1	27	None
153	259	Routine referral to other clinician
29	64	None
Unknown	Unknown	None
46	207	Comorbidity
15	247	Staging & further investigations
68	11	Patient delay

TABLE IV

TISSUE SAMPLING METHODS

Hospital	Cases (*n*)	Sampling methods (cases; *n*)
Dumfries and Galloway	2	Excisional biopsy (2)
Crosshouse	4	Excisional biopsy (2) Parotidectomy (1) Incisional biopsy (1)
Southern General	2	Excisional biopsy (1) Incisional biopsy (1)
Hairmyres	1	Excisional biopsy (1)
Ayr	1	Excisional biopsy (1)
Wishaw	2	Excisional biopsy (1) Biopsy not specified (1)
Gartnavel General	1	Excisional biopsy (1)
Falkirk	4	Excisional biopsy (2) Parotidectomy (2)
Glasgow Royal Infirmary	3	Core biopsy (3)
Victoria Infirmary	1	Excisional biopsy (1)
Stirling	1	Parotidectomy (1)

World Health Organization subtype and treatment

As one would expect, a range of World Health Organization lymphoma subtypes was seen, including several B type lymphomas, but also the uncommon parotid region T cell lymphoma (Table VI).

The majority of patients treated received chemotherapy (Table VII). In one patient, palliation was deemed the most suitable care.

TABLE V

SPECIMENS USED TO TYPE PAROTID REGION LYMPHOMA

Site	Type	Cases (*n*)
Parotid node	Excisional biopsy	11
Parotid parenchyma	Core	3
	Excision	1
	Biopsy not specified	3
	Parotidectomy	4

TABLE VI

WORLD HEALTH ORGANIZATION LYMPHOMA SUBTYPES IDENTIFIED

Site	WHO subtype	Cases (*n*)
Parotid node	Follicular	5
	Diffuse large B cell	1
	Hodgkins	3
	Marginal zone	1
	Angioimmunoblastic T cell	1
Parotid parenchyma	Marginal zone	7
	Diffuse large B cell	3
	Follicular	1

WHO = World Health Organization

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TABLE VII

PAROTID LYMPHOMA TREATMENT

Site	Treatment	Cases (*n*)
Parotid node	Chemotherapy	6
	Radiotherapy	1
	'Watchful waiting'	4
Parotid parenchyma	Chemotherapy	5
	Radiotherapy	2
	'Watchful waiting'	3
	Supportive or palliative	1

Discussion

The intention of this study was to identify potential ways in which the patient treatment pathway for suspected parotid region lymphoma could be streamlined, leading to improved management from diagnosis to treatment. In particular, we were keen to identify potentially unnecessary surgical procedures, i.e. open surgery which could perhaps be replaced by a closed radiological technique. Specifically, we wished to identify current practice regarding the use of ultrasound-guided core biopsy. If there was an established practice of core biopsy within the network, we wanted to establish its availability and whether it could be extended to other centres.

Three of our 22 cases were typed, and these patients' subsequent treatment planned, on the basis of a core biopsy, without the need for traditional lymph node excision or other open surgery. All three biopsies were performed by the same operator in one unit, under ultrasonic guidance. No complications were reported. These patients accounted for all the cases of parotid region lymphoma diagnosed in this unit within the study period. In this unit, there was a well established neck lump clinic with access to a consultant radiologist and consultant head and neck surgeon. There was also a wealth of experience in core biopsy techniques used in squamous cell disease and thyroid practice, and in lymphoma within cervical lymph nodes.[14]

Within the study period, the principal reasons for delay were routine referral from another clinician or specialty, staging, and investigations. The longest delay resulted from a misplaced referral. Delays due to tissue sampling were not noted. However, the study period preceded the introduction of the new cancer treatment targets, under which a wait of two to three weeks for operating theatre time could be highly significant. When one considers that parotidectomy generally requires a 2–3 hour surgical theatre session, and that head and neck surgeons have a similar need to prioritise squamous malignancy, the optimisation of theatre capacity is vital.

In parotid region lymphoma, the ability of the surgeon to excise an intact node for histological examination is limited not only by the difficult anatomy of the parotid region but also by the nature of the disease itself and its lack of confinement to nodal structures when involving salivary tissue. One can perhaps argue that the management of parotid region lymphoma should therefore be treated as a 'special case' – the removal of a discrete node should neither be expected nor required. It was clear from our analysis that core biopsy was not widely used for diagnosis within the network area studied.

In the literature, active debate continues amongst the head and neck, haematology, and pathology specialties regarding the ideal management of suspected lymphoma of the parotid region. The priority must be timely and accurate diagnosis and typing of disease, within the context of the new cancer targets. In minimising delays from referral to treatment, patients should not undergo unnecessarily invasive procedures such as parotidectomy simply to reduce delay associated with serial non-diagnostic cytological assessment. Historically, open surgery has been performed to ensure an adequate tissue sample, after inadequate FNAC.

There is a role for core biopsy in the management of lymphoma, particularly for lymphomas of the parotid region. The role of FNAC is less well defined, but few would argue that it serves a useful role as a screening tool and that it can identify squamous carcinomas, the treatment of which is entirely different to that of lymphoma. In both FNAC and core biopsy, the role of the experienced ultrasonographer is well recognised in identifying those areas of change within the lump which are likely to yield diagnostic tissue, and also in avoiding structures such as the retromandibular vein and indeed the facial nerve. For open surgery and image-guided closed techniques, a thorough knowledge of the anatomy of the parotid region is mandatory. Certain features are reported to increase the likelihood of a parotid lesion being lymphomatous – in particular, a previous history of lymphoma, the presence of multiple cervical (or other) lymph nodes and multiplicity of lesions within the parotid. Furthermore, it should be noted that lymphadenopathy elsewhere may be safer to biopsy than lymphadenopathy in the parotid region and may be diagnostic – a further argument in favour of the use of ultrasound.

- **Lymphoma can be diagnosed on the basis of core biopsy**
- **Parotid lymphoma is uncommon**
- **Recent guidance suggests that greater importance should be given to core biopsy**
- **Parotid lymphoma can be diagnosed, staged and typed on the basis of core biopsy**
- **Managed clinical network collaboration is required to facilitate change in practice**

A multidisciplinary team approach to the management of parotid region lymphomas is desirable, as is an interface between the head and neck and the haemato-oncology managed clinical networks. Only by such interaction between surgeons, radiologists, haematopathologists and the haemato-oncologists delivering care can the ultimate aim of speedy

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diagnosis, accurate typing and minimal morbidity be achieved.

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