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BRIEF COMMUNICATION

Diagnosing cancer: changing patterns of care

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Abstract

We prospectively assessed 100 consecutive inpatient referrals made to the Medical Oncology Unit. The major end-point was the time to diagnostic biopsy. Referral trends and treatment outcomes were also recorded. Our results show that the referring units undertook the diagnostic process in the vast majority and the time to inpatient diagnostic biopsy has fallen from 10 to 4.6 days, compared with a similar study 13 years ago. This emphasizes the changing role of the oncologist in current day multidisciplinary cancer care.

The optimal care of patients with cancer includes a timely and accurate diagnosis. A significant proportion of patients with cancer present for the first time in an inpatient setting and require a diagnosis. We have previously emphasized significant delays in the diagnosis of cancer in patients at our hospital.[1] This study prospectively assessed the inpatient referral pattern to our Medical Oncology Unit and in particular, evaluated the time to diagnosis.

In our previous study carried out in 1992, we documented a median delay of 10 days between admission and a diagnostic biopsy. That study emphasized the circuitous diagnostic work-up for many patients. Indeed, the lesion to be biopsied and the presumptive diagnosis of cancer were generally made within 24 h of admission. As an example, a supraclavicular node would be detected on admission, but an array of investigations, including computed tomography (CT) scans, endoscopies, bone scans and blood tests would be conducted before the diagnostic fine-needle aspiration or core biopsy of the node was carried out.

In this study, we prospectively collected data on 100 consecutive inpatient referrals made to the Medical Oncology Unit. Referrals of haematological malignancies, including lymphoma, were almost always made to the haematology referral service, and thus constituted a minority of diagnoses seen. Referring units were comprised of general and specialist units from both surgical and internal medical (non-oncology) disciplines.

The major end-point of the study was the time to diagnostic biopsy. Referral outcomes were also recorded, including the time for the referral to be seen by the oncology registrar and consultant, whether diagnostic or management advice was given and the subsequent follow up of the patient. Treatment outcomes recorded include the type of treatment received, including enrolment into trials, no treatment, transfer to a hospice and inpatient deaths.

All 100 patients were included in the analysis. The patient characteristics are shown in Table 1. Forty-six per cent of patients did not have a diagnosis before admission, 34% had a clinical diagnosis of cancer without tissue confirmation and 20% had a tissue diagnosis made before admission. The majority of the referrals followed clinical diagnoses and were made for management purposes (91%), whereas only 9% of the referrals made were for diagnostic advice.

Of the 74 patients who had tissue diagnoses made as an inpatient, the average times from the detection of biopsiable lesion to obtaining a biopsy was 16.7 days for patients who had their initial work-up as an outpatient and 4.6 days for patients who had their diagnoses first suspected as an inpatient.

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Table 1 Patient characteristics

	Number (%)
Total	100
Sex	
Male	63
Female	37
Age (years) (range)	
Median	66 (16–84)
Referring unit	
Surgical units	81
Neurosurgery	40
Colorectal	17
Hepatobiliary	9
Breast, endocrine	7
Other	8
Medical units	19
General	6
Thoracic	6
Other	7
Diagnosis	
Lung	21
Central nervous system	20
Colorectal	20
Melanoma	7
Pancreatico-biliary	7
Others	25
Diagnosis (Dx) and hospital admission	
Dx not suspected prior	46
Dx suspected prior but no tissue Dx	34
Tissue Dx made before admit	20
Reason for referral	
Diagnosis	9
Management	91
Mode of tissue diagnoses	
Surgery	52
Endoscopic	30
Radiological transcutaneous	5
Bedside percutaneous	7
No tissue diagnosis	6
Multiple methods	3

Table 2 Referral and treatment outcomes

Median response time (h) (range)	
Registrar	2 (1–48)
Consultant	24 (1–96)
Patients not seen by consultant during inpatient stay	28
Followed up by oncology outpatients (%)	62
Median time seen at outpatients (weeks) (range)	3 (1–6)
Followed up by other units/interhospital transfer (%)	38
Patients whose cancer was suspected before admission	54
Tissue Dx obtained before admission (%)	37
Tissue Dx obtained during inpatient referral (%)	52
No tissue Dx obtained (%)	11
Average time from detection of biopsiable lesion to biopsy (days)	16.7
Patients whose cancer was suspected during admission	46
Average time from detection of biopsiable lesion to biopsy (days)	4.6
Treatment outcomes (no. patients)	
Surgery	64
Radical	44
Palliative	20
Chemotherapy	34
Trial	8
Palliative	16
Adjuvant	10
Radiotherapy	20
Palliative	12
Adjuvant	8
Chemo-radiotherapy	11
Palliative	3
Adjuvant	7
Radical	1
No treatment	35
Not required	7
Comorbidities	5
Palliative care	15
Community	10
Hospice	5
Inpatient death	5

Dx, diagnosis.

Six patients did not have a tissue diagnosis obtained. The reasons for these included radiological appearances consistent with recurrences of known malignancies (three patients), a coagulopathy, which precluded biopsy (one patient), a rapidly deteriorating performance status resulting in a withdrawal of active treatment (one patient) and a clinical scenario deemed consistent with metastatic pancreatic cancer (one patient).

The oncology registrar saw all referrals (Table 2). The median time the referral was seen by the registrar was 2 h (range 1–48 h) and by the consultant was 24 h (range 1–96 h). The majority of the neurosurgical and gastrointestinal referrals were seen by consultants who subspecialized in these areas, whereas the remainder were seen by the duty consultant. There were 28 patients who were not reviewed by a consultant before discharge; of these 62% were followed up as outpatients by the oncology unit, whereas the remainder were either followed up by the parent unit or were transferred back to the referring hospital. The median time to follow up in the oncology outpatients was 3 weeks (range 1–6 weeks).

The management of our patients included chemotherapy (34%), radiotherapy (20%), combined treatment (11%) and no treatment (35%). Eight per cent of patients were enrolled into chemotherapy trials. Of the patients who received no treatment, five died during their inpatient stay, five were not offered treatment because of their poor performance status and 15 patients were referred to palliative care.

This study documents an improvement in the time taken to diagnose cancer in a hospital population. In just over

a decade, the time to diagnostic biopsy among inpatient referrals has fallen from 10 to 4.6 days. The reasons for this are multiple and no doubt include factors such as access to CT-guided biopsy and the mix of tumours. Through multidisciplinary meetings and feedback to parent units during referrals, our unit has campaigned strenuously to increase the willingness of non-oncologists to place diagnostic biopsy at the top of the list rather than to undertake an extensive staging work-up first before biopsy.

Several other observations were noted. First, the inpatient referral pattern does not parallel the incidence of different cancers in the community and is skewed towards the diagnoses that require inpatient admissions such as high-grade gliomas. Although the time taken for an inpatient diagnosis of cancer is efficient, it reflects the subgroup of patients with more symptomatic disease and whereby outpatient diagnosis may not be possible, such as in patients requiring surgery. Second, the overwhelming majority of the referring parent units are surgical (81%), with the medical units only constituting 19% of the inpatient referrals. Finally, a significant majority were referred for management advice rather than for diagnosis.

Although studies have suggested that increased hospital delay in diagnosis has no negative influence on survival,[2–4] the reasons for having a shorter delay in obtaining a tissue diagnosis include a shorter inpatient stay and fewer unnecessary investigations. Decreasing the delay in diagnosis may also reduce the psychological stress on patients and their families who have a potential diagnosis of cancer.

Subspecialization within oncology has also changed the way referrals are managed in tertiary referral centres. The oncologists consulted on the majority of the referrals subspecialized in gastrointestinal and neurosurgical oncology, reflecting the distribution of patient diagnoses. This is a change in the practice of having the duty oncologist consult on the wide range of cancers being referred. Further, many cancers are now first seen by medical oncologists in the outpatient setting. Indeed, the paucity of inpatient breast cancer referrals attests to this.

The time taken for a referral to be seen was short and did not contribute significantly to a delay in management. All referrals were seen by the oncology registrar before discharge; however, consultants did not see a significant minority of patients referred. This is generally explained by referrals that were made just prior to discharge from hospital. All of these patients were discussed with a consultant and a management plan considered. Of these patients, a significant majority were followed up as an outpatient by the oncology department within 2 weeks.

The treatment outcomes are not surprising, with a significant minority not offered treatment because of poor performance status. Of note is that there was an 8% enrolment rate into chemotherapy trials. This compares with the Victorian average of 6% (Cancer Council of Victoria, pers. comm. 2005).

Inpatient referrals constitute a significant component of the workload of hospital-based oncology units. This prospective study of 100 consecutive patients reflects current trends in the referral patterns to oncologists. In the vast majority of referrals, the referring unit has undertaken the diagnostic process and the improvement in the times taken to obtaining a tissue diagnosis is particularly encouraging. The role of oncologists has shifted away from recommending diagnostic investigations to the management of the disease, often in combination with the referring unit. This reinforces the current day multidisciplinary approach to cancer management.

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