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Main Article

Prevalence of pain in head and neck cancer out-patients

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Abstract

Background: This study aimed to determine the prevalence of pain, and the adequacy of its treatment, amongst patients with head and neck cancer, and to determine whether specific groups could be identified as being at risk of pain.

Methods: Consecutive patients attending head and neck oncology out-patient services were surveyed.

Results: The prevalence of pain was 34 per cent, lower than that found in systematic reviews. No specific risk factors for pain were identified. Particular pain problems in this population comprised a high incidence of neuropathic pain, breakthrough pain and pain of non-malignant origin.

Conclusion: The prevalence of unrelieved pain was high in this study population, although no specific risk factors were found. A further study is planned to determine the effect of using a routine screening tool and an immediate pain treatment protocol in this group of patients.

Key words: Head And Neck Neoplasms; Prevalence; Pain; Risk Factors

Introduction

Two recent systematic reviews of nearly 100 published studies on the prevalence of pain in cancer patients and the adequacy of analgesic treatment in such patients have indicated that cancer pain is still a major problem, despite recent advances in analgesic treatments.[1,2] Van den Beuken-van Everdingen *et al.* reported an overall pain prevalence of greater than 50 per cent in patients with all cancer types; the highest cancer subtype was head and neck cancer, with a pain prevalence of 70 per cent.[1] Deandrea *et al.* found that nearly one in two patients with cancer pain did not have adequate analgesia.[2] These figures demonstrate a major deficiency in the management of patients with cancer, particularly those with head and neck cancer.

The purpose of this study was to define the problem of pain in head and neck cancer patients in our hospital, and to identify any patients particularly vulnerable to the development of pain. Additionally, we wanted to better understand the problem of pain in cancer survivors, the recognition of breakthrough and neuropathic pain, and the phenomenon of non-malignant pain in cancer patients.

Results from this study are expected to be used to more effectively focus resources on improving pain management and quality of life in this group of patients, and to identify barriers to pain control.

Materials and methods

Study setting

The study was approved by the ethics committee of the Royal Marsden Hospital, London.

Patients were recruited from head and neck oncology out-patient clinics at the Royal Marsden Hospital, a large, tertiary referral cancer hospital in the UK. Some of the clinics focused on medical treatments (i.e. radiotherapy and chemotherapy) and others on surgical treatment, while some were mixed.

Patient characteristics

The inclusion criteria for this study were: age greater than 18 years; diagnosis of head and/or neck cancer; able to respond to an assessment written in English; and able to provide informed consent to participate in the study. Study subjects included patients who had received anticancer treatment (surgery, radiotherapy and chemotherapy), patients currently receiving anticancer therapy, and patients characterised as having advanced, metastatic and/or terminal disease.

The only exclusion criterion was the risk that the patient's health would be compromised by participation in the study.

Study characteristics and data collection

Consecutive patients attending any of the six regular head and neck oncology out-patient clinics were eligible for inclusion. A week before their out-patient clinic appointment, all eligible patients were contacted by post or telephone and informed of the study. On the clinic date, eligible patients were approached by the research team and, if they agreed to inclusion, informed consent was obtained. The screening questionnaire was then filled out by the patient with the assistance of a member of the

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research team, who was independent from the medical staff.

Screening tools

Demographic information. This was obtained from the patients' electronic records, and comprised age, gender, tumour site and histopathological type, and treatment history.

Pain aetiology. All patients were asked by the research team if they had pain or not, and what analgesic medication was being taken. Patients who scored positive for pain then underwent an assessment of their pain by the research team member to determine the possible aetiology of the pain (i.e. neuropathic, nocioceptive or mixed; due to cancer or anticancer treatment; or non-cancer-related pain).

Pain assessment. Patients with pain were asked to fill out two well validated and reliable self-assessment pain research tools: the Brief Pain Inventory (a collection of visual analogue scales (VASs) assessing pain severity and impact on function), and the self-assessment version of the Leeds Assessment of Neuropathic Symptoms and Signs Pain Scale (which uses multiple questions to assess the presence of neuropathic pain).[3,4]

Adequacy of pain management. This was assessed using the Pain Management Index. This is a widely used research tool which determines whether the patient is receiving adequate analgesia for cancer-related pain.[5] It compares the patient's worst pain score on the Brief Pain Inventory to the potency of the prescribed analgesia, according to the World Health Organization analgesic ladder.[6] Negative scores indicate inadequate analgesia.

Risk factors

We aimed to determine whether certain subpopulations were associated with severe pain. The risk factors examined were: (1) gender (was the likelihood of pain associated with being male or female?); (2) surgery; (3) chemotherapy; (4) radiotherapy (was the presence of pain associated with previous surgery, chemotherapy or radiotherapy?); (5) tumour site (was the presence of pain associated with tumours at a particular anatomical site, e.g. tongue or mouth?); and (6) histopathology (was the presence of pain associated with certain histopathological types, e.g. adenocarcinoma?).

Post-study tracking

Since a brief pain assessment was performed as part of the screening, it was sometimes felt that the patient would need advice on their pain management. With ethics committee approval and the agreement of the clinicians responsible for the patient, the research team member would in such circumstances institute some form of post-study tracking. This could consist of either (1) giving advice and contact details, (2) prescribing appropriate analgesia, and/or (3) booking the patient into their local pain management clinic. A note was made on the patient's questionnaire regarding whether or not such tracking had occurred.

Results and analysis

Patients

Of the 124 eligible patients, 70 consented to the study. Fifty-four patients did not participate in the study for various reasons, listed in Table I. Reasons for patient refusal included poor English, not receiving the information leaflet, being too ill and having just received bad news. Patients' ages ranged from 19 to 90 years, with a mean age of 57 years. Patients were recruited from a total of 12 out-patient clinics: three medical oncology, three surgical, two plastics, two mixed medical and surgical, and two thyroid.

Pain

Prevalence. Twenty-four patients (34 per cent; 95 per cent confidence interval (CI) 23–47 per cent) reported pain due to any cause in the previous 24 hours (Table II). The patients' Brief Pain Inventory VAS scores ranged from 3 to 10. Nine patients (38 per cent) described their pain as moderate (i.e. VAS score 4–6), while 14 patients (58 per cent) reported severe pain (i.e. VAS score 7–10). The prevalence of severe pain was 20 per cent.

Chronicity. In patients reporting pain, 54 per cent had chronic pain (i.e. pain present for more than three months), while the remaining 46 per cent had pain of less than three months' duration.

Aetiology. Pain secondary to anticancer treatment was present in 42 per cent of patients with pain. Tumour-related pain was present in 33 per cent. Pain due to non-cancer causes was present in 25 per cent (six patients). One patient described residual pain from a stroke, while the remaining five complained of lower back pain. Two patients felt their pain was moderate, while four described it as severe. Three of the five patients with chronic back pain had their analgesia reviewed by the hospital pain

TABLE I
DESCRIPTION OF PATIENTS

Characteristic	*n*	%
Age (years)		
<65	50	71
65–74	11	16
>75	9	13
Sex		
Male	34	49
Female	36	51
Reason for non-participation		
Did not attend clinic appointment	5	9
Cancelled clinic appointment	20	37
Patient not seen	18	33
Refused to enter study	11	20

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TABLE II

PATIENTS' PAIN: PREVALENCE AND OTHER CHARACTERISTICS

Pain parameter	*n*	%
*Prevalence**		
Yes	24	34
No	46	66
Chronicity†		
Acute	11	46
Chronic	13	54
Aetiology†		
Treatment-related	10	42
Tumour-related	8	33
Non-cancer-related	6	25
Breakthrough pain†		
Breakthrough analgesia used	12	50
Adequacy of analgesia†		
+ve PMI‡	9	38
−ve PMI**	15	62
Neuropathic pain†		
+ve S-LANSS	7	29
Post-study tracking†		
Required	12	50

*When asked 'any pain in previous 24 hours from any cause?'. †For 24 patients reporting pain. ‡Adequate treatment; **inadequate treatment. +ve = positive; −ve = negative; PMI = Pain Management Index; S-LANSS = Leeds Self-Assessment of Neuropathic Symptoms and Signs Pain Scale

team, while one patient was booked into the pain clinic.

Breakthrough pain. Twelve of the 24 patients with pain felt that they required breakthrough analgesia. Most of these patients (nine of 12) had chronic pain, and the remaining three had acute pain. Thirty-three per cent of these patients described their pain as moderate, while the remainder described their pain as severe. Seven out of these 12 patients received some form of post-study tracking: three received advice and the contact details of the pain control team, and four were booked into the pain clinic.

Adequacy of analgesia. Fifteen of the 24 patients reporting pain (62 per cent) had a negative score on the Pain Management Index, indicating undertreatment with analgesia.

Neuropathic pain. Three patients were assessed by the researchers as having neuropathic pain. However, seven patients scored high enough on the Leeds Self-assessment of Neuropathic Symptoms and Signs Pain Scale (score >12/20) to strongly suggest a neuropathic element to their pain. Of the seven patients who screened positive for neuropathic pain, one described their pain as mild, one as moderate and five as severe. Only one patient was receiving adequate analgesia according to the Pain Management Index, while the rest were undertreated (i.e. they had negative Pain Management Index scores). However, two of these patients were already taking anticonvulsants, and so were receiving appropriate treatment that was not measured by the Pain Management Index. Three of the seven patients were given pain clinic

TABLE III

ASSOCIATION OF PATIENT RISK FACTORS WITH PREVALENCE OF ANY PAIN IN PREVIOUS 24 HOURS

Risk factor	Pain?*		*p*†
	No	Yes	
Gender			
Female	24	12	
Male	22	12	0.863
Surgery			
No	11	7	
Yes	35	17	0.633
Chemotherapy			
No	31	13	
Yes	15	11	0.277
Radiotherapy			
No	9	3	
Yes	37	21	0.457
Tumour site			
Pharynx	6	5	
Thyroid	21	7	
Tongue	5	3	
Other	14	9	0.581
Histopathology			
Papillary	15	4	
Squamous	17	11	
Other	14	9	0.363

Data represent patient numbers unless otherwise indicated. *When asked 'any pain in the last 24 hours?'. †Chi-square test.

appointments. Of the four who received no post-study tracking, one was already taking an antineuropathic pain agent, and one had a Pain Management Index score indicating adequate analgesia.

Post-study tracking. Twelve patients received some form of post-study surveillance. Four were given

TABLE IV

ASSOCIATION OF PATIENT RISK FACTORS WITH PAIN SEVERITY

Risk factor	Pain severity		*p*
	Mild or mod	Severe	
Gender			
Female	3	9	
Male	7	5	0.214*
Surgery			
No	3	4	
Yes	7	10	1.000*
Chemotherapy			
No	5	8	
Yes	5	6	1.000*
Radiotherapy			
No	1	2	
Yes	9	12	1.000*
Tumour site			
Pharynx	2	3	
Thyroid	2	5	
Tongue	3	0	
Other	3	6	0.175†
Histopathology			
Papillary	0	4	
Squamous	7	4	
Other	3	6	0.071†

Data represent patient numbers unless otherwise indicated. *Fisher's exact test (due to low sample number); †chi-square test. Mod = moderate

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TABLE V

PREVIOUS STUDIES INVESTIGATING PAIN IN HEAD AND NECK CANCER PATIENTS

Study (Number of patients)	Patient population	Study type	Pain measure	Duration of follow-up	Prevalence of head and neck pain
Olson[7] n = 51 1978	Head and neck cancer, undergone surgical treatment previously	Prospective	Interview	Unknown	32–39% mild to moderate (8% moderate) no patients reported severe pain
Shedd[8] n = 60 1980	Head and neck cancer patients with severe pain	Retrospective			85% had pain 55% suffered the highest degree of pain 13% were treated with weak opioids good pain control was possible for almost all patients
Robertson[9] 1982 n = 522	Approximately 90% squamous cell carcinoma	Retrospective 522 consecutive patients	Pain present/not present	Retrospective study	8% to 66% depending on cancer type
Keefe[10] n = 30 1986	100% squamous cell carcinoma	Prospective Consecutive Longitudinal	VAS Pain map or drawings SCL-90 Behavioural dysfunction index	3–6 weeks after initial evaluation(during treatment) 2–3 months after initial evaluation (at completion of treatment)	40% at initial evaluation 50% at final evaluation
Weissman[11] n = 14 1989	Newly diagnosed head and neck cancer patients undergoing radiotherapy	Prospective	Pain diaries	Unknown	29% before treatment 100% during treatment moderate to severe pain on 37% of treatment days
Vecht[12] n = 25 1992	Head and neck cancer patients with severe pain	Prospective	NRS	Unknown	100% initially 28% after treatment(s)
Bjordal[13] n = 126 1992	Head and neck cancer	Consecutive, Prospective and retrospective groups	Quality-of-life questionnaire		18% “quite a bit” or “very much” pain
Grond[14] n = 167 1993	Head and neck cancer	Open Prospective	Questionnaire Body map Verbal rating scale	Unknown	100% at referral
Epstein[15] n = 34 1993	Head and neck cancer pre-/post-radiotherapy (91% squamous cell carcinoma)	Prospective	VAS Pain maps McGill questionnaire	6–12 months	82% at diagnosis 100% at midpoint of treatment 46% 6–12 months after treatment
Saxena[16] n = 117 1995	Head and neck cancer (90% clinical stage III or IV)	Prospective Consecutive Longitudinal	Pain questionnaire NRS		84% (55% moderate to severe, 50% of whom had unrelieved pain)

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Talmi[17] n = 62 1997	Terminal head and neck cancer	Prospective Consecutive	MPQ Body map VAS	72 hour assessment period	77% had pain with mean VAS 4.2/10
Forbes[18] n = 38 1997	End-stage head and neck cancer	Retrospective	Review of medical notes		79% (26% neuropathic)
Chaplin[19] n = 93 1999	Newly diagnosed, curable head and neck cancer	Prospective Longitudinal	VAS GHQ	2 years	48% at diagnosis (8% severe) 25% at 12 months (3% severe) 26% at 24 months (4% severe)
Terrell[20] n = 175 1999	Head and neck cancer	Prospective	HNQOL SF-12	None	Unknown
Chua[21] n = 40 1999	Head and neck cancer (83% squamous cell carcinoma)	Consecutive Retrospective	Self-reported Brief Pain Inventory Pain map Numeric pain intensity scale	Retrospective	100% had some pain 52% had severe pain
Sist[22] n = 25 1999	Persistent pain after radical neck dissection (79% squamous cell carcinoma)	Prospective Consecutive patients	NAPIS MPQ Maps Daily Pattern PRI		100% at referral
Talmi[23] n = 88 2000	Head and neck cancer who had neck dissection	Retrospective and prospective groups	VAS Body map	1–8 months prospective 6–24 months retrospective > 2 years retrospective	70% after neck dissection 25% after 6–24 months 0% after 2 years

Mod = moderate; pts = patients; H&N = head and neck; Ca = cancer; VAS = visual analogue scale; SCL-90 = Symptom Checklist 90-R; wk = weeks; mth = months; NRS = Numerical Rating Scale; QoL = quality of life; MPQ = McGill Pain Questionnaire; hr = hours; GHQ = general health questionnaire; HNQOL = University of Michigan Head and Neck Quality of Life instrument; SF-12 = Medical Outcomes Study SF-12 General Health Survey; NAPIS = Numerically Anchored Pain Intensity Scales; PRI = Pain Rating Index

advice and contact details, three were prescribed analgesia only, two patients were asked to liaise with their existing pain service, and three were given appointments for the pain management clinic.

Risk factors

Binary logistic regression was used to identify any predictors or risk factors associated with self-reported pain. The following variables were tested: gender, surgery, chemotherapy, radiotherapy, tumour site and histopathology. These variables were tested against patients reporting 'any pain in the previous 24 hours' (Table III) and against patients' severity of pain (i.e. comparison of patients with mild or moderate pain versus patients with severe pain) (Table IV). There were no statistically significant associations between the risk factors tested and patients' reporting of any pain, or patient's severity of pain.

Discussion

Various statistics have been reported for the prevalence of pain in head and neck cancer patients, depending on the clinical setting surveyed (e.g. oncology clinic or palliative setting) and the type of cancer and its treatment. Our 70 patients had a pain prevalence of 34 per cent (95 per cent CI 23–47 per cent). This is considerably less than the result of a synthesis of three studies containing 95 patients, which found a prevalence of 70 per cent (95 per cent CI 51–88 per cent).[1] Our own review of prevalence figures from published studies revealed rates of 40–94 per cent in 17 studies from a variety of clinical settings, including developing countries (Table V). Therefore, it would appear that our pain prevalence rate is slightly lower than those reported elsewhere, but that pain is still a significant problem in this group of patients, with more than one in three patients reporting pain.

Whilst we found a slightly lower prevalence figure than that reported in the systematic review, our assessment of the adequacy of pain treatment revealed that 62 per cent of patients were receiving inadequate pain treatment. This compares with a weighted mean value of 43 per cent from a review of 26 studies of cancer pain patients, and to a rate of 51 per cent for cancer in-patients with pain.[2,24] Clearly, more needs to be done to improve the recognition and treatment of pain in patients with head and neck cancer.

In an attempt to identify specific 'at risk' patients, we assessed a number of variables which we thought may influence pain prevalence. Other studies have reported an increased incidence of chronic pain in women, radiotherapy, post-surgery, with certain tumour types, and in patients whose acute pain was poorly controlled.[10,15,19,25,26] However, we found no positive no associations, either between the presence of any pain and the investigated risk factors, or between the severity of pain and the same risk factors. This could be due to the aforementioned heterogeneity of our patient population, or to an insufficient sample size. However, these findings draw attention to the importance of recognising severe, chronic pain in any patient. Conceivably, pain prevalence may be related to other variables which were not assessed. Further, on-going studies are already underway to explore this.[27]

It is particularly important to recognise neuropathic pain, as this type of pain is common (occurring in 34 per cent of our patients) and difficult to treat, requiring specialist drugs such as antidepressants and anticonvulsants in the first instance.[12,22]

Interestingly, 25 per cent of the patients with pain had non-cancer-related pain. This compares well with a recent study which reported a similar finding in a general oncology out-patient population, and emphasises the fact that this type of pain must be considered and appropriate treatment pathways established.[28]

Similarly, the presence of breakthrough pain needs to be established. Breakthrough pain analgesia was needed by 50 per cent of our patients with pain. Such pain has a reported prevalence of 65 per cent in other, large scale studies, and is a indicator of poor prognosis.[29,30] Inadequate management of breakthrough pain has been known to result in reduced function, higher incidence of depression, and the need for hospital admission.[31,32]

- **Recent systematic reviews of pain in cancer out-patients indicate that as many as 50 per cent may have significant pain; the prevalence amongst head and neck cancer patients may be even higher**
- **Identification of specific pain risk factors may enable resources to be targeted at certain 'at risk' patient groups**
- **This study assessed the impact of gender, surgery, radiotherapy, chemotherapy, tumour site and pathology on the prevalence of pain in head and neck cancer out-patients, but found no statistically significant associations**
- **A high prevalence of neuropathic pain, breakthrough pain and pain of non-malignant origin was found in these patients**
- **Further studies will examine the impact of routine screening and treatment protocols in such patients**

Overall, this study has highlighted the significant problem of pain and its control in head and neck cancer patients. Whilst no specific risk factors for developing pain were identified, our results highlight the importance of systematically enquiring about pain (particularly neuropathic and breakthrough pain) in such patients, and of implementing an immediate treatment plan.

Further studies are needed in this area as pain prevalence rates, and undertreatment rates, are high. Future research has commenced into the effectiveness and cost effectiveness of a new systematic screening and treatment algorithm for head and

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neck cancer out-patients, which is sponsored by the National Institute of Health Research.

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References

1 van den Beuken-van Everdingen MHJ, de Rijke JM, Kessels AG, Schouten HC, van Kleef M, Patijn J. Prevalence of pain in patients with cancer: a systematic review of the past 40 years. *Ann Oncol* 2007;**18**:1437–49
2 Deandrea S, Montanari M, Moja L, Apolone G. Prevalence of undertreatment in cancer pain. A review of published literature. *Ann Oncol* 2008;**19**:1985–91
3 Cleeland CS, Ryan KM. Global use of the Brief Pain Inventory. *Ann Acad Med* 1994;**23**:129–37
4 Bennett M. The LANSS pain scale: the Leeds assessment of neuropathic pain symptoms and signs. *Pain* 2001;**92**:147–57
5 Cleeland CS, Gonin R, Hatfield AK, Edmonson JH, Blum RH, Stewart JA, Pandya KJ. Pain and its treatment in outpatients with metastatic cancer. *N Engl J Med* 1994;**330**: 592–6
6 World Health Organization. *Cancer Pain Relief*. Geneva: World Health Organization, 1986
7 Olson ML, Shedd DP. Disability and rehabilitation in head and neck cancer patients after treatment. *Head Neck Surg* 1978;**1**:52–8
8 Shedd DP, Carl A, Shedd C. Problems of terminal head and neck cancer patients. *Head Neck Surg* 1980;**2**:476–82
9 Robertson MS, Hornibrook J. The presenting symptoms of head and neck cancer. *N Z Med J* 1982;**95**:337–41
10 Keefe FJ, Manuel G, Brantley A, Crisson J. Pain in the head and neck cancer patient: changes over treatment. *Head Neck Surg* 1986;**8**:169–76
11 Weissman DE, Janjan N, Byhardt RW. Assessment of pain during head and neck irradiation. *J Pain Symptom Manage* 1989;**4**:90–5
12 Vecht CJ, Hoff AM, Kansen PJ, de Boer MF, Bosch DA. Types and causes of pain in cancer of the head and neck. *Cancer* 1992;**70**:178–84
13 Bjordal K, Kaasa S. Psychometric validation of the EORTC Core Quality of Life Questionnaire, 30-item version and a diagnosis-specific module for head and neck cancer patients. *Acta Oncol* 1992;**31**:311–21
14 Grond S, Zech D, Lynch J, Diefenbach C, Schug SA, Lehmann KA. Validation of World Health Organization guidelines for pain relief in head and neck cancer. A prospective study. *Ann Otol Rhinol Laryngol* 1993;**102**:342–8
15 Epstein JB, Stewart KH. Radiation therapy and pain in patients with head and neck cancer. *Eur J Cancer B Oral Oncol* 1993;**29B**:191–9
16 Saxena A, Gnanasekaran N, Andley M. An epidemiological study of prevalence of pain in head & neck cancers. *Indian J Med Res* 1995;**102**:28–33
17 Talmi YP, Waller A, Bercovici M, Horowitz Z, Pfeffer MR, Adunski A, Kronenberg J. Pain experienced by patients with terminal head and neck carcinoma. *Cancer* 1997;**80**:1117–23
18 Forbes K. Palliative care in patients with cancer of the head and neck. *Clin Otolaryngol* 1997;**22**:117–22
19 Chaplin JM, Morton RP. A prospective, longitudinal study of pain in head and neck cancer patients. *Head Neck* 1999; **21**:531–7
20 Terrell JE. Quality of life assessment in head and neck cancer patients. *Hematol Oncol Clin North Am* 1999;**13**: 849–65
21 Chua KS, Reddy SK, Lee MC, Patt RB. Pain and loss of function in head and neck cancer survivors. *J Pain Symptom Manage* 1999;**18**:193–202
22 Sist T, Miner M, Lema M. Characteristics of postradical neck pain syndrome: a report of 25 cases. *J Pain Symptom Manage* 1999;**18**:95–102
23 Talmi YP, Horowitz Z, Pfeffer MR, Stolik-Dollberg OC, Shoshani Y, Peleg M, Kronenberg J. Pain in the neck after neck dissection. *Otolaryngol Head Neck Surg* 2000; **123**:302–6
24 Larue F, Colleau SM, Brasseur L, Cleeland CS. Multicentre study of cancer pain and its treatment in France. *BMJ* 1995;**310**:1034–7
25 Salomon L, Tcherny-Lessenot S, Collin E, Coutaux A, Levy-Soussan M, Legeron MC, Bourgeois P, Cesselin F, Desfosses G, Rosenheim M. Pain prevalence in a French teaching hospital. *J Pain Symptom Manage* 2002;**24**:586–92
26 Kehlet H, Jensen TS, Woolf CJ. Persistent postsurgical pain: risk factors and prevention. *Lancet* 2006;**367**:1618–25
27 Apolone G, Mangano S, Compagnoni A, Negri E, Mosconi P, Mannino S, Villa M, Zuccaro P. For the Cancer Pain Outcome Research Study Group. A multidisciplinary project to improve the quality of cancer pain management in Italy: background, methods, and preliminary results. *J Ambul Care Manage* 2006;**29**:332–41
28 Valeberg BT, Rustøen T, Bjordal K, Hanestad BR, Paul S, Miaskowski C. Self-reported prevalence, etiology, and characteristics of pain in oncology outpatients. *Eur J Pain* 2008;**12**:582–90
29 Bruera E, Scholler T *et al*. A prospective multi-center assessment of the Edmonton Staging System for cancer pain. *J Pain Symptom Manage* 1995;**10**:348–55
30 Caraceni A, Portenoy RK. An international survey of cancer pain characteristics and syndromes. IASP Task Force on Cancer Pain. International Association for the Study of Pain. *Pain* 1999;**82**:263–74
31 Portenoy RK, Payne D, Jacobsen P. Breakthrough pain: characteristics and impact in patients with cancer pain. *Pain* 1999;**81**:129–34
32 Fortner BV, Okon TA, Portenoy RK. A survey of pain-related hospitalizations, emergency department visits, and physicians office visits reported by cancer patients with and without history of breakthrough pain. *J Pain* 2002;**3**:38–44

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