

Original Article

Symptoms Associated with Malignant Wounds: A Prospective Case Series

Vincent Maida, MD, BSc, CCFP, ABHPM, Marguerite Ennis, PhD,
Craig Kuziemsky, PhD, and Linda Trozzolo, RN

Division of Palliative Medicine (V.M.), University of Toronto, and Centre for Palliative Care (V.M., L.T.), William Osler Health Centre, Toronto; Applied Statistics (M.E.), University of Toronto, Toronto, and Telfer School of Management (C.K.), University of Ottawa, Ottawa, Canada

Abstract

A significant proportion of cancer patients develop malignant wounds. Malignant wounds are generally nonhealable and are managed with palliative methods. Palliative wound care encompasses the pain and symptom management of such wounds. Sixty-seven of 472 cancer patients from a prospective sequential case series of palliative medicine consultations demonstrated malignant wounds at the time of referral and were studied to determine the most common symptoms and anatomic sites associated with malignant wounds. Data were collected from patients' own reports of up to three wound-related symptoms. Overall, 67.7% of malignant wounds were associated with at least one of the following eight symptoms: pain, mass effect, esthetic distress, exudation, odor, pruritus, bleeding, and crusting; 21.9% of wounds were associated with two or more symptoms; and 11.5% of wounds were associated with three symptoms. The symptom point prevalence was 31.3% for pain, 23.9% for mass effect, 19.4% for esthetic distress, 17.9% for exudation, 11.9% for odor, 6% for pruritus, 6% for bleeding, and 1.5% for crusting. Breast cancer patients had the highest prevalence of malignant wounds (47.1%). The anterior chest wall and breast was the site of 31.2% of wounds. The perineum and genitalia presented with the highest ratio of symptoms per wound (2.2). The results of this study reflect that malignant wounds are associated with a significant symptomatic burden, and reinforces the need for thorough clinical assessment and evaluation of symptoms. Further research is required to define the optimal methods of pain and symptom management for malignant wounds. J Pain Symptom Manage 2009;37:206–211. © 2009 U.S. Cancer Pain Relief Committee. Published by Elsevier Inc. All rights reserved.

Key Words

Malignant wounds, cancer, advanced illness, pain, symptoms, prospective, palliative wound care

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Address correspondence to: Vincent Maida, MD, BSc, CCFP, ABHPM, 101 Humber College Boulevard,

Toronto, Ontario M9V 1R8, Canada. E-mail: vincent.maida@utoronto.ca

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Introduction

Wound management is evolving as a major dimension and tenet in the overall care of patients with advanced illness, given the high prevalence and incidence rates of various wound categories in this clinical setting.¹ The range of cutaneous-related problems in cancer patients is similarly extensive.^{1,2} They are associated with multiple symptoms that contribute to increased distress, loss of dignity, and associated decreased quality of life.^{2,3} Wounds also represent a significant concern from a health care economic perspective, as their management is escalating health-care expenditures.⁴

It has been reported that malignant wounds occur in 14.5% of patients with advanced cancer.¹ The overwhelming majority of malignant wounds are primary skin neoplasms, or the result of metastatic spread of a remote neoplasm to the cutaneous system.⁵ Cutaneous metastases are frequently the first sign of extranodal metastatic disease, especially in patients with melanoma, breast cancer, or mucosal malignancies of the head and neck region.⁶ The exception is the Marjolin's ulcer, which is the rare malignant transformation of a chronic wound, usually in the setting of a chronic pressure ulcer.⁵ Malignant wounds may be classified into four principal classes: nodules and induration, fungating, malignant ulcers, and other (zosteriform and mixed).^{1,7} In the setting of advanced cancer, malignant wounds are generally considered as "nonhealable" wounds.⁵ The goals of care for such wounds are achieved through the methods of palliative wound care.⁸ Palliative wound care endeavors to optimally manage the pain and other symptoms that occur in the setting of nonhealable wounds, thereby relieving and improving quality of life.⁸

Future improvements in the palliative management of wounds may ultimately be promoted through an accurate quantification of the prevalence of pain and other symptoms.

Review of Malignant Wound Literature

A literature search was conducted on Medline, Cochrane, CINAHL (Cumulative Index to Nursing and Allied Health Literature), EBM Reviews, and Healthstar databases between 1991 and September 2007 to identify relevant and related studies. Key words used

were malignant wounds, pain, symptoms, prospective, prevalence, advanced illness, and cancer. There were no studies that fulfilled all of the listed search criteria. Schulz et al. in 2002 reported the findings of a survey completed by health care professionals regarding the clinical problems that they perceive patients with malignant wounds experience.⁹ The following five problem themes were identified by the 136 health care professionals surveyed: physical (pain, odor, exudates, bleeding, and edema), emotional stress, functional compromise, social concerns, and complications (e.g., fistulas and nutritional deterioration).

Although the literature on the management of wound-related pain and other symptoms exists, it is mostly of an observational and anecdotal variety. A number of management recommendation statements and protocols have been reported.^{5,10-12} However, at present, there are no published guidelines based on randomized controlled studies. Adderley and Smith conducted a systematic review of topical agents and dressings for fungating wounds.¹³ Only two randomized controlled trials (RCTs) were identified. One trial yielded weak evidence that 6% miltefosine solution applied topically to small superficial fungating breast cancer lesions may slow local progression. The other trial demonstrated that topical metronidazole reduced malodor from malignant wounds when compared to placebo. There were significant methodological concerns in both RCTs and the degree of statistical power was insufficient to justify their clinical usage.

This study addresses some of the research shortcomings in wound management by accurately quantifying the prevalence of malignant wounds and wound symptoms in cancer patients at the point of referral (baseline) and looking at the relationship between wounds and age, gender, Palliative Performance Scale¹⁴ (PPSv2), diagnosis, and anatomic site.

Methods

The data source for this study comprised all new referrals to a regional palliative care program from May 1, 2005 to June 30, 2006. Referrals included both cancer patients and patients with advanced noncancer disorders. All

patients were examined within 24 hours of the initial referral. Referrals were received from community primary care physicians, community-based oncologists, surgeons, and internists, as well as tertiary-care oncologists. The palliative program comprises a community consultative service with linkage to a palliative care inpatient unit and associated hospital-based palliative consultative service. Collectively, the combined community and hospital-based components serve an estimated population of 750,000 within the northwest quadrant of metropolitan Toronto, Canada. All patients or their substitute decision makers provided consent to have their clinical data registered in a research database. The data collected were entered on a customized and anonymous Microsoft Access database by all research collaborators on an accrual basis. Performance status was measured using the PPSv2 at baseline.¹⁴ The total study and observational period spanned 24 months. All wounds were managed by a specialist wound management team consisting of a specialist wound physician and advanced practice nurse. After the baseline assessment, all wounds were managed in accordance with available practice protocols.^{5,10–12} The study protocol was approved by the research ethics board at the William Osler Health Centre in Toronto, Canada.

Statistical Analysis

Characteristics of cancer patients with one or more malignant wound at referral were compared to those with no malignant wounds. A *t*-test was used for age and PPSv2 and a Chi-squared test with continuity correction for the categorical variables, gender and race. Baseline point prevalence of malignant wounds was calculated as the number of cancer patients with one or more malignant wounds present at referral as a percentage of the total number of cancer patients referred. This was done overall and separately by main cancer diagnosis. A Chi-squared test with continuity correction was performed to test if the prevalence differed by diagnosis. Up to three symptoms from eight symptom categories were recorded for each wound at referral. Prevalence of symptoms by type was calculated as the number of cancer patients who reported that symptom at least once as a percentage of the total

number of cancer patients. The number of wounds that exhibited each symptom was also tallied. The association of symptoms with wound site was explored by finding, for each anatomical site, the symptom that was most often reported and the percentage of wounds at the site that displayed it. The relative symptom burden per site was computed as the total number of symptoms of any type reported for wounds at that site divided by the number of wounds at that site.

Results

Prevalence of Wounds

The prospective sequential case series consisted of 672 patients, of whom 472 suffered from cancer and 200 suffered from advanced noncancer disorders. Sixty-seven cancer patients manifested malignant wounds at baseline referral, corresponding to a 14.2% point prevalence. There were 96 malignant wounds documented at baseline (72% of patients had one wound and the rest had two to five wounds, giving an average of 1.4 wounds per patient). The 96 wounds were classified as follows: 32 (33%) nodules and induration, 53 (55%) fungating, 9 (9.4%) malignant ulcers, and 2 (2.6%) others (zosteriform and mixed).

Patient Characteristics

The cohort of 67 patients that presented at the baseline referral date with malignant wounds possessed the following demographic profile (Table 1): their mean age was 72.3 (± 12.3) years and 50.7% were male; 79.1% were Caucasian, 10.4% were Black, 6% were North Asian, and 4.5% were South Asian. Their mean baseline PPSv2 was 51.7%. There were no statistically significant differences compared to those cancer patients without malignant wounds.

The 472 cancer patients were diagnosed with the following main diagnoses: 7.2% breast cancer, 30.9% gastrointestinal cancer, 23.7% lung cancer, 3.2% head and neck cancer, 4.9% primary skin cancers, 15.3% genitourinary and gynecologic cancer, and 14.8% other cancers. Certain cancers were significantly ($P < 0.001$) associated with a propensity to develop malignant wounds (Table 2). Patients with breast, head and neck, and primary skin

Table 1
Baseline Patient Characteristics

Baseline Characteristics	Patients with Malignant Wounds (n = 67)	Patients without Malignant Wounds (n = 405)	P-Value
Mean age (years ± SD)	72.3 ± 12.3	72.5 ± 13.3	0.906 ^a
Gender, n (%)			0.765 ^b
Male	34 (50.7)	217 (53.6)	
Female	33 (49.3)	188 (46.4)	
Race, n (%)			0.457 ^b
Caucasian	53 (79.1)	351 (86.7)	
Black	7 (10.4)	18 (4.4)	
North Asian	4 (6.0)	14 (3.5)	
Hispanic	0 (0)	3 (0.7)	
South Asian	3 (4.5)	19 (4.7)	
Baseline PPSv2 (%)	51.7 ± 17.5	51.5 ± 16.2	0.940 ^a

^at-test for equality of means.

^bContinuity adjusted Chi-square test.

cancer were the most likely to present with malignant wounds at baseline (47.1%, 46.7%, and 39.1% of patients, respectively).

The eight main symptoms—pain, mass effect, esthetic distress, exudation, odor, pruritus, bleeding, and crusting—were identified from patient's own reports of up to three symptoms associated with their malignant wounds. Overall, 32.3% of malignant wounds were reported as asymptomatic, 45.8% were associated with one symptom, 10.4% had two symptoms, and 11.5% had three symptoms.

Table 2
Baseline Point Prevalence of Malignant Wounds by Primary Cancer Diagnosis of Patient

Primary Cancer Diagnosis	Number of Patients with Malignant Wounds	Point Prevalence of Malignant Wounds (%)
Breast (n = 34)	16	47.1
Gastrointestinal ^a (n = 146)	15	10.3
Lung ^b (n = 112)	12	10.7
Head + neck ^c (n = 15)	7	46.7
Primary skin cancers ^d (n = 23)	9	39.1
Genitourinary + gynecologic ^e (n = 72)	2	2.8
Others ^f (n = 70)	6	8.6

^aGastric, esophageal, small intestine, colorectal, biliary, pancreatic, and liver.

^bNon-small-cell lung cancer, small-cell lung cancer, and mesothelioma.

^cOral, laryngeal, and salivary gland.

^dMelanoma, squamous cell cancer, and cutaneous B-cell lymphoma.

^eCervix, ovarian, endometrial, renal, bladder, ureter, and prostate.

^fLeukemias, myeloma, sarcomas, carcinoid, and primary brain tumors.

The percentage of wounds associated with, and the percentage of patients who reported suffering from, each symptom type are reported in Table 3. The most common symptom reported by patients with malignant wounds was pain (31.3% of patients). Crusting (1.5% of patients) was the least common symptom.

The main anatomic sites for the 96 malignant wounds were summarized into six regions (Table 4). The anterior chest and breast region was the location of 30 (31.2%) malignant wounds, whereas 23 (24%) were located in the head and neck, 18 (18.8%) over the anterior abdomen, 13 (13.5%) over the thoracic and lumbar spine, four (4.2%) involving the upper and lower extremities, and eight (8.3%) involving the perineum and genitalia.

The relative symptom burden associated with particular anatomic site regions was computed as a ratio of total number of symptoms divided by the number of wounds involving the corresponding anatomic site (Table 4). The perineum and genitalia displayed the highest ratio of 2.2 symptoms per wound, and the upper and lower extremities the lowest, namely 0.2 symptoms per wound. Symptom burden can equally be seen in the number of wounds that were asymptomatic: none of the wounds of the perineum and genitalia were asymptomatic, compared to 75% of the wounds of the upper and lower extremities. The symptom type most often associated with the wounds of each anatomic region is also shown in Table 4.

Table 3
Prevalence of Symptoms Reported for Malignant Wounds

Symptom	Number (%) of Wounds with Symptom (n = 96)	Number (%) of Patients Experiencing Symptom from the Malignant Wound (n = 67)
Symptom free	31 (32.3)	19 (28.4)
Pain	29 (30.2)	21 (31.3)
Mass effect	17 (17.7)	16 (23.9)
Esthetic distress	16 (16.7)	13 (19.4)
Exudate	14 (14.6)	12 (17.9)
Odor	10 (10.4)	8 (11.9)
Pruritus	5 (5.2)	4 (6)
Bleeding	4 (4.2)	4 (6)
Crusting	2 (2.1)	1 (1.5)

Table 4
Anatomic Sites of Malignant Wounds and Associated Symptoms

Wound Site	Number (%) of Wounds (n = 96)	Number (%) of Wounds at Sites That Are Asymptomatic	Ratio of Number of Symptoms to Number of Wounds	Most Common Symptom (% of Wounds with Symptom)
Head/neck	23 (24)	9 (39.1)	0.7	Esthetic distress (47.8)
Chest/breast	30 (31.2)	11 (36.7)	0.9	Pain (33.3)
Abdomen	18 (18.8)	5 (27.8)	1.2	Pain, exudate (tied at 33.3)
Thoracic/lumbar spine	13 (13.5)	3 (23.1)	1.1	Pain (38.5)
Upper/lower extremities	4 (4.2)	3 (75.0)	0.2	Crusting (25)
Perineum/genitalia	8 (8.3)	0 (0)	2.2	Pain (87.5)

Discussion

A significant proportion of cancer patients develop malignant wounds. Malignant wounds are generally nonhealable and are managed with palliative methods, where the emphasis is on optimizing comfort, dignity, and quality of life through pain and symptom management.

Breast cancer malignancies demonstrated the greatest propensity to develop malignant wounds; 47.1% of the wounds were associated with this diagnosis. This is similar to the retrospective study by Lookingbill et al., where 50.4% of malignant wounds occurred in breast cancer patients;⁶ the anterior chest and breast area was the most common site of malignant wounds in this study, accounting for 31.2% of all wounds. This compares favorably to a retrospective survey by Wilkes, where 39% of wounds involved the anterior chest and breast area.¹⁵

Pain was the most common symptom of patients with a malignant wound at referral. There were a variety of pain types, including inflammatory, neuropathic, and mixed types. Pain could be persistent, or meet criteria for "breakthrough" pain, including "incident" pain, "end-of-dose" failure, and "spontaneous" pain.

Twenty-four percent of patients with malignant wounds complained of difficulties arising from the "mass effects" of the malignant wound. This often translated into reduced mobility of limbs and spine, as well as creating technical difficulties with clothing. This mostly occurred in the setting of exophytic fungating wounds, but also arose from periwound edema surrounding other wound types, such as malignant ulcers, induration, nodules, and zosteriform eruptions.

Nineteen percent of patients suffered some degree of esthetic distress. Patients reported feeling embarrassed and socially isolated over their obvious deformity and associated dressings that accentuated asymmetry in their appearances.

Exudation of biological fluids from wounds was associated with 14.6% of malignant wounds. Most commonly, this represented serous-like fluid, but also took the form of purulent discharge in a proportion of patients. In a significant number of cases, the periwound area was noted to be macerated from suboptimal exudate management.

In total, 10.4% of malignant wounds were associated with unpleasant odors. Patients used a variety of descriptors to define this symptom, including putrid, "fishy," and like "spoiled meat." In addition, patients reported concern and confusion regarding the appropriate hygienic management of their wounds. The presence of odor also produced embarrassment and social isolation for the affected patients.

Pruritus or itchiness was associated with 5.2% of malignant wounds. Patients experiencing this symptom reported this both within the wound itself as well as within the periwound area.

Bleeding occurred in 4.2% of malignant wounds. Mostly, this was from small venules and capillaries, but arose from arterial vessels in one case. Two cases reported serosanguinous drainage. All cases shared the feeling that they were potentially "bleeding to death."

The least prevalent symptom, associated with two wounds in the same person, was crusting. These wounds had excessive exudates, and the evaporation of the fluid component left crusted residuals on and around the wound. Pruritus was also reported for both wounds.

The absolute prevalence of wound symptoms reported in this study likely represents an underestimate, as the mean baseline performance status of the patients was 51.7%. At this level of performance status, a significant proportion of patients display a degree of drowsiness.

A significant limitation of this study relates to the lack of assessment of the impact of malignant wounds on quality of life using existing and validated tools. Although the presence or absence of symptoms was recorded, their actual magnitude was not quantified. Future research should provide ratings or scoring of the various symptoms using objective measurements such as numeric rating scales.

By identifying the prevalence of malignant wounds and wound symptoms in cancer patients, this study provides the basis for research on the optimal management of such wounds. Although this study dealt specifically with cancer patients, wounds are also prevalent in patients with noncancer diagnoses. Future research should address symptoms associated with other wound classes in the cancer and noncancer populations.

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References

1. Maida V, Corbo M, Dolzhkov M, et al. Wounds in advanced illness: a prevalence and incidence study based on a prospective case series. *Int Wound J* 2008;5(2):305–314.
2. De Conno F, Ventafriidda V, Saita L. Skin problems in advanced and terminal cancer patients. *J Pain Symptom Manage* 1991;6(4):247–256.
3. Grey JE, Enoch S, Harding KG. Wound assessment. In: Grey JE, Harding KG, eds. *ABC of wound healing*. Oxford: Blackwell Publishing, 2006: 1–4.
4. San Miguel L, Torra I, Bou JE, Verdu Soriano J. Economics of pressure ulcer care: review of the literature on modern versus traditional dressings. *J Wound Care* 2007;16(1):5–9.
5. Naylor W. Malignant wounds: aetiology and principles of management. *Nurs Stand* 2002;16(52):45–55.
6. Lookingbill DP, Spangler N, Helm KF. Cutaneous metastases in patients with metastatic carcinoma: a retrospective study of 4020 patients. *J Am Acad Dermatol* 1993;29(1):228–236.
7. Schulz V. Malignant wounds and pressure ulcers. In: MacDonald N, Oneschuk D, Hagen N, Doyle D, eds. *Palliative medicine: A case-based manual*, 2nd ed. New York: Oxford University Press, 2005: 333–348.
8. Ferris FD, Al Khateib AA, Fromantin I, et al. Palliative wound care: managing chronic wounds across life's continuum. *J Palliat Med* 2007;10(1):37–39.
9. Schulz V, Triska OH, Tonkin K. Malignant wounds: caregiver-determined clinical problems. *J Pain Symptom Manage* 2002;24(6):572–577.
10. Queen D, Woo K, Schulz V, et al. Addressing the pain: chronic wound pain and palliative cancer care. *Ostomy Wound Manage* 2005;51(11A Suppl):9–11.
11. Hatsfield-Wolfe ME, Rund C. Malignant cutaneous wounds: a management protocol. *Ostomy Wound Manage* 1997;43(1):56–66.
12. McDonald A, Lesage P. Palliative management of pressure ulcers and malignant wounds in patients with advanced illness. *J Palliat Med* 2006;9(2):285–295.
13. Adderley U, Smith R. Topical agents and dressings for fungating wounds. [Review]. *Cochrane Database Syst Rev* 2007;2:CD003948.
14. Anderson F, Downing GM, Hill J, et al. Palliative performance scale (PPS): a new tool. *J Palliat Care* 1996;12:5–11.
15. Wilkes L. Malignant wound management: what dressings do nurses use? *J Wound Care* 2001;10(3):65–70.