

MALIGNANT WOUNDS

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Abstract

In modern medicine the treatment of malignant wounds still poses a big challenge. The presence of a malignant wound has a great impact on the life of a patient, in physical, psychical and social sense. A malignant wound also greatly impacts a patient's family and significant others. The treatment of patients with malignant wounds thus requires a multidisciplinary approach that addresses all aspects of a patient's functioning. The goal of treating a patient with a malignant wound should be oriented towards maintaining or restoring a patient's dignity, management or alleviation of pain and towards as great of a quality of life as possible. This article presents the theoretical basis and our experiences with treatment of patients with malignant wounds. Three cases are presented

Keywords: malignant wounds, key-points for clinical practice, experience

1. Introduction

A fungating malignant wound is a devastating complication of cancer. It occurs when tumor cells invade the skin and destroy surrounding tissues, infiltrating its supportive vasculature. Neoplastic wounds may result from the growth of a primary skin tumor, from a skin metastasis or from the invasion of the skin by tumors emerging from deeper levels. Local invasion may initially manifest as an inflammation with redness, induration, heat, and tenderness (Meaume et al. 2013).

The prevalence of malignant wounds is currently unknown. However, it is estimated that around 5%–10% of breast cancer cases, sarcomas and melanomas result in malignant wounds (Winardi et al. 2019). They usually appear during the last 6 to 12 months of patient's life but they can be present for years. Wounds of neoplastic etiology can arise from any type of tumor and are more frequently located on the breast, followed by the neck, chest, extremities, genitals, head, and other sites (Tsihklakidou et al. 2019; Choate et al. 2019).

Malignant wounds may present as either a crater-like ulcer (destructive process) or as raised nodules similar in appearance to a cauliflower (proliferating) or as a combination of both (Alexander S. 2009). The malignant tumor wounds are formed by infiltration of malignant tumor cells into the skin structure, with a break in the integrity of the skin due to uncontrolled cell proliferation that the oncogenesis process induces (Recka et al. 2012).

Malignant wounds are characterized by rapid growth and are often associated with malodor, exudate, edema, necrosis, pain, bleeding, pruritus, and infection (da Costa Santos et al. 2010). Edema, exudate, and necrosis arise from cellular perfusion alteration. Necrotic tissue is a perfect environment for bacterial growth leading to secondary infection. The bacteria that colonize the wound activate proteases that fragment the necrotic tissue, causing the dead tissue to liquefy and generate exudate. The bleeding is the result of an imbalance in hemostatic process. The rapid growth of a tumor can lead to the compression of contiguous structures, such as soft tissues and nerves, causing pain and mobility reduction (Starace et al. 2022). Patients afflicted with wounds experience multidimensional suffering (Maida et al. 2009). Patients with chronic wounds suffer a variety of adverse stressors negatively impacting their daily lives. These stressors include

pain, exudate leakage, restricted mobility, poor hygiene, feelings of disgust or shame because of disfigurement or malodour, sleep disturbance, loss of sexuality, dissatisfaction with treatments, loss of control, social isolation, dependency, residency relocation, anger and lack of confidence in the healthcare provider because of failure to heal (Chrisman, 2010).

The diagnosis of a malignant ulcer is already suspected on the basis of neoplastic history and clinical presentation, but definite diagnosis demands a skin biopsy and histopathological examination (da Costa Santos et al. 2010).

Treatment and care of malignant wounds is primarily palliative, and focuses on alleviating pain, controlling infection and odour from the wound, managing exudate and protecting the surrounding skin from further deterioration. In malignant wounds, with tissue degradation and death, there is proliferation of both anaerobic and aerobic bacteria. The aim of antibiotic therapy is to successfully eliminate these bacteria, reduce associated symptoms, such as odour, and promote wound healing (Ramasubbu et al. 2017). The latest publication by the European Oncology Nursing Society (EONS) recommends a number of methods and products for controlling infections and odour from MWs. These include wound cleaning and irrigation, debridement, topical application or oral intake of metronidazole, silver dressings, changing dressings (twice a day) and opiate use for pain management during wound care (Probst et al. 2015). Treatment of malignant fungating wounds is challenging. Considering the neoplastic nature of the wounds, complete healing or improvement cannot be expected with the application of classically prescribed dressing for wounds. A mostly palliative treatment, focusing on maintaining the patient's quality of life, is a reasonable choice (Starace et al. 2022).

Although treating malignant wounds is mandatory to prevent infections and reduce wound healing time, this disease has often been overlooked by researchers (Yukuyama et al. 2022). Malignant wounds are a serious health problem and efforts for the prevention as well as control of symptoms are required. The number of published papers on the topic of malignant wounds has recently been rising. There are many clinical challenges in providing medical care for patients with neoplastic wounds.

In this paper we present the theoretical basis and our experiences with treatment of patients with malignant wounds.

2. Key-points for clinical practice

Wound treatment must include advanced clinical knowledge, skills, and technology. The goals of palliation are stabilization of existing wounds, prevention of new wounds if possible and symptom management to improve patient comfort, well-being and quality of life. There are no definitive wound protocols for treating dying patient's wounds, only guidelines (Nenna, 2011).

The care should be planned individually as the feelings of every individual are subjective. The wound-related symptoms like malodour, exudate, bleeding, pain and itching should be managed in an effective way. The psychological aspect of the wound should not be underestimated (Probst et al. 2015).

The basic tool followed in the treatment of chronic wounds is the TIME concept. This TIME model offers a comprehensive approach to monitor certain wound parameters in addition to the risk factors that can help identify patients with non-healing wounds. Goals can then be addressed with appropriate tailored interventions. The TIME framework includes the following parameters: Tissue (non-viable or deficient), Infection or inflammation, Moisture (balance or imbalance), and Edge of wound (non-advancing or undermined). This clinical tool provides guidance in monitoring the wound and targeting the interventions. (Chrisman, 2010). Expanding on the TIME tool, a group of wound healing experts outlined guidelines with another original mnemonic, MEASURE, for assessing chronic wounds: Measure (length, width, depth and area), Exudate (quantity and quality-odor), Appearance (wound bed), Suffering (pain), Undermining, Re-evaluate (wound treatment effectiveness) and Edge (condition of edge and surrounding skin) (Keast et al.

2004). Assessing these parameters for clinical outcomes for controlling exudate, minimising or eliminating odour, preventing infection and relieving pain offers goals for improving QOL and alternative end points if wound healing is not achievable (Chrisman, 2010).

Wound experts at the palliative care unit at Calvary Hospital in New York have carried out studies on recalcitrant wounds and effective interventions aimed at comfort which have included original medication compounds that are cost effective. These interventions target components of an original mnemonic for palliative chronic wound management: S-P-E-C-I-A-L (S = stabilising the wound; P = preventing new wounds; E = eliminate odour; C = control pain; I = infection prophylaxis; A = advanced, absorbent wound dressings; L = lessen dressing changes) (Alvarez et al. 2007).

Because there is a lack of standardised protocols based on research and evidence, treatment of fungating wounds is based on case studies or expert opinion. Below are listed common principles for palliative care of the fungating wound.

- Cleanse wound gently with warm normal saline and keep wound moist.
- Wound cares are directed to controlling the symptoms distressful to the patient with attention to comfort, anxiety, cosmetic appearance, dressing wear time and proper fit. Consider using the WoSSAC for patient self-assessment of distressful symptoms. Anticipate bleeding for care strategies listed previously. Efforts are geared to stabilising the wound and preventing further deterioration. For other palliative measures to treat the underlying malignancy, discuss with the patient/family benefit versus burden at end of life.
- Case studies promote the use of wound care products, such as polyurethane foam and non-adhesive gelling foam dressings to reduce pain and handle leakage; activated charcoal dressings for malodour; and antimicrobial dressings with activated charcoal for infected, malodourous wounds for comfort. Consider topical metronidazole gel for odour control.
- Other dressing brands to consider are ones that have a non-adherent wound contact layer (soft silicone perforated sheet) for exudates to be absorbed and moisture evaporated from the second layer or alginates with a secondary retention layer of foam. Include the patient in choosing the product that is most comfortable with long wear time. (Chrisman, 2010).

Table 1 presents key-points for clinical practice when caring for patients with a malignant wound.

Table 1. Key-points for clinical practice when caring for a patient with a malignant wound (MFW) (Probst et al. 2015).

Patient Assessment	Impact of the wound in terms of psychosocial functioning Co-morbidities Functional limitations and compromise from wound location and symptoms
Assessment of MFW	A clinical assessment is always required It is important to review the symptoms of odour, exudate, pain, bleeding and psychological impact when assessing the wound with reference to a wound assessment tool if appropriate Swab cultures can sometimes be helpful to determine the need for antimicrobial treatment, if the patient is showing signs of spreading infection
Management of the symptoms: This includes the following strategies starting with Cleansing.	
Cleansing	Wound cleansing reduces odour by removing necrotic tissue and decreasing bacterial counts Gentle irrigation of the wound with normal saline is helpful and can be done as often as needed

Odour control	<p>Wound cleaning and use of dressings for exudate control is important to help reduce odour</p> <p>Metronidazole (orally or topically) can be helpful</p> <ul style="list-style-type: none"> • Metronidazole 500 mg bid or tid PO/IV • Gel or injectable metronidazole can be applied (not injected) on the wound with each dressing change <p>- Activated-charcoal and antimicrobial (silver) dressings can help absorb and reduce odour when the dressings completely cover the wounds and contain the volatile substances responsible for the malodour</p> <p>Essential oils (bergamot, or lavender), shaving foam (in a bowl), placed in the room can be helpful. Incense may be helpful but strong scents can sometimes cause difficulties in breathing for patients or may induce nausea</p>
Local bacterial colonization	<p>Local bacterial colonization of the wound is expected and should be treated with topical cleansing, debridement as appropriate and antimicrobial agents.</p> <p>If there are signs of systemic infection, the use of oral or intravenous antibiotics may be considered</p>
Exudate	<p>Dressings should be selected that can best conceal the wound, absorb exudate and reduce odour</p> <p>Dressings are generally changed 1-2 times per day based on the amount of exudate and odour</p> <p>Menstrual pads can be especially effective because of their good absorption and availability, but discuss with the patient prior to use to ensure acceptability</p>
Pain	<p>It is important to help control pain by using morphine and other medications (some malignant wounds can cause neuropathic pain)</p> <p>Topical application of morphine can be helpful to reduce wound pain for some patients.</p> <p>Dressing changes can be particularly painful. Giving a breakthrough or rescue dose of morphine prior to the dressing change can often be helpful</p> <p>Non adherent dressings are recommended</p>
Bleeding	<p>Prevention is the best method to avoid bleeding. Care must be taken when removing dressings to avoid bleeding. Use warmed normal saline irrigation to moisten the dressing and prevent trauma during dressing changes. Use non-adherent dressings and moist wound products when possible</p> <p>If bleeding does occur, apply direct pressure for 10-15 minutes. Local ice packs can also assist in controlling bleeding</p> <p>Radiotherapy can be considered if appropriate for the patient and the tumour is thought to be radiosensitive. Electrochemotherapy can provide a 'vascular lock' and control bleeding</p> <p>Haemostatic dressings or pressure dressings are sometimes required if the bleeding is severe</p> <p>If a patient is at the end of life and having uncontrolled bleeding</p>

	from a large wound, using dark towels/ blankets to mask the blood can decrease anxiety for the patient and family. Pain control and sedation with a benzodiazepine would be important considerations in this situation
Pruritus	Apply cool hydrogel sheets or products with menthol or capsaicin-ointment (0.25-0.75% only by intact skin conditions) Additives to baths such as specialized non- perfumed oils or oatmeal only for intact skin conditions
Concerns of managing MFW	Ensure that the dressing used is not “too dry” and therefore causes more pain and bleeding at the time of dressing changes Perfumes used sometimes become associated with the unpleasant odour rather than “hide” the smell and do not necessarily help Healthcare providers can become “desensitized” to the smell and so must listen to the patient or family if they complain about the smell from the wound rather than rely on their own observations



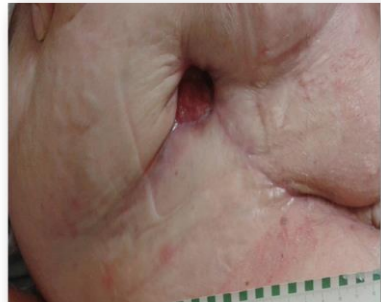



3. Case presentations

3.1. Case example #1: Patient is a 93-year-old female. She has been diagnosed with squamous cell carcinoma on the left cheek that appeared 10 years ago. The patient received surgery and radiation therapy. She was hospitalised on a care department. On first examination a malignant wound was present on the left side submandibular. The wound size was 3 x 2,5 cm. The wound was excreting heavily, bleeding in parts, there was wet necrosis present in the wound, the surrounding skin was reddened, signs of inflammation were present. The patient complained of stabbing pain in the area of the wound (VAS 5-6). There was an unpleasant odour present that, alongside with the location of the wound (left side of face), greatly impacted the patient’s quality of life. The patient was greatly distressed because of the appearance, heavy excretion, and unpleasant odour. She declined food and contact with other patients. We began treating the wound on 23.1.2015, in the beginning we had to change the dressings daily, because the wound was excreting heavily, the surrounding skin was reddened, the wound was bleeding slightly, and there was pain and itch in the area surrounding the wound. We cleaned the wound and its surrounding with warmed saline. As primary dressing we placed a dressing with silver and as secondary we placed a highly absorbent dressing. We treated the surrounding skin with a cream with added zinc. On 9.2.2015 the patient no longer reported pain, in the area surrounding the wound she felt an itch. The itch ceased on 16.2.2015. On 9.2.2015 we also noticed the excrete has greatly diminished and it was more and more serous. After that we changed the dressings every two days. The wound treatment was very challenging, caution was needed because of maceration and possible dissemination of the malignant growth. On 16.2.2015 there was no more excretion from the wound. On 23.2.2015 the wound has healed, no further treatment was needed. There was a slight coloration of skin visible, which we treated with olive oil. The patient was without pain, pleased and calm. Her quality of life has improved greatly – she no longer had trouble eating, she was socializing with other patients and was leaving her room accompanied by a nurse.

3.2. Case example #2: The patient is a 76-year-old female. She has been diagnosed with squamous cell carcinoma on the forehead, on the ear and behind the ear. The wounds were present since 1994, but the patient has been hiding the changes on her head under a hat up until 2012 when she first visited a doctor. Because of an underlying illness she was not deemed fit for surgery and she declined other methods of treatment. The patient was very weakened, she became immobile and declined food. We began treating the wound on 11.2.2015. On first examination the size of the wound on the forehead was 9 x 7 cm, the second

wound covered the entire auricle, the wound behind the ear measured 7 x 5 cm. On the bed of all three wounds were fibrin plaques and wet necroses. The edges of all wounds were macerated, all wounds produced a yellow-green excretion in medium quantity with unpleasant odour. The surrounding skin was reddened, inflamed and flaky. The patient reported her wounds were painful (VAS 3), especially during care. The patient greatly distressed, because of the scale and appearance of the wounds, changed physical appearance, unpleasant odour and excretion, worsening of general condition and dependency on others. On 11.2.2015 we started treating the wounds with a primary dressing with silver. As a secondary dressing we used polyurethane foam, the surrounding area was protected with a protecting cream. For cleaning the wounds and their surrounding we used warm saline. The dressings were changed every two or three days until 20.4.2015. We experienced great difficulties with the care for surrounding skin because of extensive flakes. On 20.4.2015 the wounds on the forehead and on the ear were healed; behind the ear was a small dry scab. The patient was pleased, calmed and without pain. Her quality of life has greatly improved.

3.3. Case example #3: The patient is a 90-year-old female. State after inguio-iliacal lymphadenectomy right – metastasis of malignant melanoma, metastases also present in other lymph nodes. After surgery the patient was admitted to care department. We began treatment on 24.3.2015. The malignant wound present on the right inguinal was deep and pocket-like. It measured 6 x 18 cm (undermined edges) and was 5 cm deep. The surrounding skin was reddened, inflammation was present. On the bed of the wound were fibrin plaques. The edges of the wound were oedematous and white. The wound was excreting abundant yellow discharge of unpleasant odour. In the previous hospital the wound dressing was changed daily. Pain was present (VAS 2-3), the patient required analgetic. From a swab of the wound *E. coli* and *E. faecalis* were isolated. Swelling and redness were present on the right leg. The patient required sedation, because she was psychically very burdened with the constant need for changing the wound dressing and the vast amounts of excretion with unpleasant odour. We cleaned the wound and its surrounding with warm saline. As primary dressing we used a dressing with calcium alginate, which binds excretion from the wound and microorganisms as well as maintains humidity and favourable microclimate for wound healing. The surrounding skin was protected with a protecting cream. As secondary dressing we used polyurethane foam. During the hospitalization we changed dressings every two days, the last few days we changed dressings every three days; the patient was on systemic antibiotic treatment. The patient was discharged from hospital on 26.5.2015. At discharge the wound has reduced in size to 2 x 5 x 2 cm. The surrounding skin was less red. Granulation was on the wound bed. Oedema of the wound edges has reduced; the edges were pink. Excretion has reduced, the discharge was yellow, without odour. The patient was no longer in pain and did not require analgetic since 4.5.2015. The patient condition has greatly improved, she was independently mobile with a cane. She no longer required sedatives. Pleased and calmed.

Case example #1	Case example #2	Case example #3
Beginning of treatment 23.1.2015	Beginning of treatment 11.2.2015	Beginning of treatment 24.3.2015
		
End of treatment 23.2.2015	End of treatment 20.4.2015	End of treatment 26.5.2015
		

4. Discussion

The cases are presented from an observation view-point but nevertheless illustrate, that attentive caring for malignant wound and consistently following the guide lines for treating malignant wounds, while considering all aspects of patients' quality of life, can lead to excellent results and improvement of patients' quality of life. In two of the presented cases, we achieved closure of the malignant wound, which was far more than the planned goal. Consequentially the quality of life of both patients improved. In the third presented case we reached all the goal of the palliative concept SPECIAL – S: we stabilised the wound, because the has decreased in size by half; P: we prevented the occurrence of new wounds; E: we eliminated the unpleasant odour from the wound; C: the patient was no longer in pain; I: the last microbiologic swab of the wound was negative; A: we used highly absorbent wound dressings (dressings with calcium alginate); L: we reduced the number of dressing changes from once a day to once every two or three days. The patient's quality of life improved, which is one of the main goals of treatment.

For some palliative care patients with wounds, treatment of the underlying condition will result in full or partial wound healing using best practice wound care. However, many of the wounds that palliative care patients tend to develop are often a result of the advanced life-limiting disease that has weakened the healing process preventing normal wound closure despite treatment. Focus of wound care then becomes centred on what strategies will provide the patient the most comfort in controlling symptoms, such as pain, exudate, odour, infection, bleeding, dressing comfort and reducing the negative impact on psychological and social functioning (White et al. 2009).

Conclusions

The treatment of malignant wounds is complex and requires a comprehensive approach. The task of the entire healthcare team is to manage the symptoms of malignant wounds, while considering patients' psychological problems, with a goal of improving patients' quality of life. Descriptions of clinical cases, that confirm the effectiveness of existing guide lines for treating patients with malignant wounds, are of great importance and are very helpful to doctors, nurses and everyone involved in the process of managing patients with malignant wounds. Further studies and case reports will be important so that the treatment of malignant wounds can be optimised on the highest level in the future.

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