

## Management of Wound Myiasis in the Hospice and Palliative Medicine Setting

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### Abstract

Complex wounds are common complications in hospice and palliative medicine (HPM), especially in patients with aggressive malignancies. Myiasis, or an infestation of maggots, is a rare but significant complication of such wounds. While uncommon in the United States, many HPM patients have multiple risk factors and comorbidities that increase their vulnerability to this condition. Currently, there are no standard diagnostic or treatment guidelines for wound myiasis. In addition, common management strategies may not be easily accessible in HPM settings. We present this case of a patient with malignant squamous cell carcinoma of the neck complicated by myiasis while in hospice, and our experience diagnosing and managing her infestation. We also reflect on special considerations for HPM patients when addressing the physical and psychological symptoms of wound myiasis.

**Keywords:** head and neck cancer; maggots; malignant wound; myiasis; palliative medicine

### Introduction

HOSPICE AND PALLIATIVE MEDICINE (HPM) providers often encounter patients with complex wounds. These wounds are related to various factors including poor nutrition, physical debility, malignancy, and other comorbidities that can make wound management challenging. Palliative management of the complications of such wounds often requires an interdisciplinary approach.<sup>1</sup>

Myiasis is a rare complication of malignant wounds. It is characterized by infestation of open wounds by fly larvae.<sup>2</sup> Although myiasis is most prevalent in tropical and subtropical regions, its occurrence has been increasingly well documented in other areas, including Europe and North America.<sup>3</sup>

Patients with complex wounds, particularly those related to malignancies, are at risk of wound myiasis. The infestation can be distressing for both patients and caregivers, and has a significant impact on quality of life.<sup>4</sup> Little has been written about the management of wound myiasis in the HPM setting. Here, we present the case of a hospice patient who developed myiasis of a complex malignant wound and our management of her condition.

### Case Description

RT is a 62-year-old woman with locally invasive squamous cell carcinoma of the left neck. At the time of diagnosis,

the patient was recommended to undergo surgical resection followed by radiation and chemotherapy with curative intent. However, the patient had a lifelong aversion to conventional medical practices and opted to pursue homeopathic treatments for her cancer. She was lost to follow-up until three years later when she presented with profuse bleeding from the neck tumor, by then ~8 cm by 10 cm. The mass had necrotic areas along with a foul odor concerning for infection. Imaging showed evidence of local spread to several neighboring large vessels.

During her hospitalization, RT successfully underwent an embolization procedure to reduce the bleeding. She was deemed not to be a surgical candidate due to the extent of her disease and again declined radiation or chemotherapy. After much discussion with the patient and her family, she was enrolled in hospice care at a local inpatient hospice facility.

On arrival to hospice, RT was ambulatory and fully alert. She continued to self-administer homeopathic therapies, which consisted of a variety of vitamin supplements and glutathione. Her wound care included daily dressing changes with a Vaseline base and gauze, which she preferred to do herself due to concerns for rebleeding with occasional assistance from nursing. Despite the extent of her cancer, she enjoyed taking walks outside in the gardens of the hospice facility as an important part of her physical and spiritual care plan.

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Accepted October 6, 2020.

Approximately four weeks after RT's admission to hospice, her nurse noticed a maggot fall out of the patient's neck dressing. Removal of the dressing revealed numerous maggots in and around her tumor. On evaluation by her hospice physician, the patient denied worsening pain, fevers, or recurrent bleeding but did admit to not changing her dressing for several days due to fears of bleeding. RT denied emotional distress at seeing the maggots. She believed that since maggots consume dead tissue, it meant that her tumor was dying and her homeopathic treatment was effectively treating her malignancy.

## Discussion

There are few documented cases of wound myiasis in the United States in HPM patient populations.<sup>5</sup> Among HPM patients, most myiasis literature originates from India, including a 2004 study in which 71 patients with maggot infestations were recorded in one palliative center over six years.<sup>4</sup> Regardless of their country of origin, HPM patients with complex wounds share risk factors that make them vulnerable to myiasis, including advanced age, poor hygiene, malnourishment, social isolation, and chronic diseases such as diabetes, peripheral vascular disease, and psychiatric disorders.<sup>6,7</sup>

Myiasis begins when flies oviposit into necrotic, purulent lesions; wounds that release alkaline discharge (pH 7.1–7.5) are especially attractive to flies.<sup>2,8</sup> Wound myiasis is a potential complication of head and neck cancers. In Sowan's 2004 study, 83% of the 71 patients with myiasis had underlying head and neck cancer.<sup>4</sup> In 2009, a literature review showed that there were ~20 published cases of maggot infestations originating from malignant head and neck wounds.<sup>9</sup> It has even been suggested that patients with head or neck myiasis should be biopsied for an underlying malignancy.<sup>3</sup> Head and neck cancer wounds are also often harder to dress, which can increase the risk of exposure to flies.

While the larvae removed from our patient were not sent for species identification, the majority of wound myiasis in the United States originates from flies of the Calliphoridae family, which include *Lucila sericata* (green bottle blow fly) and *Phormia regina* (black blow fly).<sup>10–12</sup> For most patients, speciation in wound myiasis is largely academic since treatment recommendations do not vary with fly type.

While there are no standardized treatment guidelines for myiasis, the consensus within the literature is that mechanical removal of all larvae is required to eradicate the infestation. Beyond this, occlusive techniques using various substances including petrolatum, beeswax, paraffin, hair gel, and adhesive tape have been described.<sup>5,11</sup> In low-resource global settings, bacon and animal fat have been successfully used as an occlusive agent, which causes deeper larvae to migrate to the surface for easier extraction.<sup>13</sup> Intensive irrigation with rinses of normal saline, aqueous chlorhexidine, hydrogen peroxide, and turpentine oil has also been shown to help with removal of tunneling larvae. Larvae can also be immobilized by agents such as lidocaine or 15% chloroform mixed with oil, to make removal easier.<sup>6,12,14</sup> We believe that many of the abovementioned management options are feasible in most HPM settings.

Less commonly, treatment may include surgical debridement of necrotic tissue in the case of an ulcerating or fungating malignancy, though this is less applicable to hospice populations given the relative invasive nature of this treatment modality. Many HPM settings in the United States have little routine exposure to myiasis and when faced with an absence of standardized guidelines, Villwock's 2014 paper presents a useful treatment algorithm for myiasis, which incorporates many of the strategies mentioned above.<sup>3</sup>

After removal of larvae, frequent dressing changes and proper wound care are essential to preventing recurrent myiasis and superinfections. For our patient, infrequent dressing changes in conjunction with spending time outdoors were likely major contributors to the development of myiasis, and our patient required regular dressing changes to prevent recurrence until her decline. However, in patients suffering from invasive head and neck malignancies, the risk of infection must be balanced with the risk of bleeding and carotid blowout, which may increase with frequent handling of dressings.

Aside from the physical symptoms, myiasis can be disfiguring, and cause significant psychological distress and disgust among patients and caregivers. Our patient's conviction of the efficacy of homeopathic care and her hope that the maggots would consume the malignant tissue caused her to have an unusually positive response to the infestation. However, for most patients, there is a significant negative psychological impact associated with myiasis. Given the stigma and visibility of maggot infestations, it is typical for patients to report feelings of fear, distress, and isolation, which are complicated by the physical symptoms of infestation.<sup>4</sup> Studies have shown improvement in well-being, depression, and feelings of distress among myiasis patients after completion of treatment.<sup>15</sup> It is thus important to take into consideration the psychological impact of a maggot infestation and have a multidisciplinary approach to management of these patients, which involves physicians, nursing, social work, chaplains, and therapists.

In addition to patient distress, there is often a component of caregiver distress to myiasis.<sup>4</sup> It is imperative, especially in HPM populations, that caregivers are counseled and trained in managing their own distress upon seeing larvae. It is also important that patients and caregivers be given proper training in wound cleaning, sanitation, and dressing changes to avoid recurrence.

Myiasis itself can be a cause of death.<sup>16</sup> In addition, malignancies that have progressed to fungation, necrosis, or ulceration are at increased risk of myiasis and are associated with a worse prognosis.<sup>17,18</sup> The most common complication of myiasis is secondary bacterial infection. Other complications include pneumocephalus, bony destruction, hemorrhage, and fistula formation.<sup>3,16</sup> The risk of certain adverse events may be elevated in malignant wound myiasis; malignant fungating wounds provide optimal environments for bacterial growth, leading to an increased risk of superinfection, especially in patients with cutaneous metastases.<sup>9,15</sup> Damage to the friable tissue and blood vessels of terminal head and neck cancer can also lead to hemorrhage.<sup>19</sup> In addition, for patients with incurable cancer, the primary underlying condition that promotes infestation is maintained, predisposing the patient toward

reinfestation. However, with timely and complete treatment these complications are preventable, and most patients recover from their infestation.

As with other conditions, careful consideration should be paid to the relative burdens and benefits of treatment. In cases where myiasis is nondistressing to the patient and family and the patient has reached a stage of end of life where intervention to the wound may cause more distress than benefit, one can consider opting out of treatment. Our patient was not experiencing the expected distress associated with myiasis, but the risk of further complications was deemed to be sufficient to warrant treatment.

Finally, wound myiasis is often a superficial sign indicating a deeper level of neglect and debility leading to insufficient wound care. However, in independent patients myiasis may denote a choice in care that has practical, emotional, cultural, or spiritual origins, as was our patient's case. Differentiating this from self-neglect requires careful examination of the patient's history, and a thoughtful approach with an interdisciplinary team including social work is essential to providing support to adequately meet such a patient's evolving needs. Any concerns for neglect or abuse such as a history of unsanitary living conditions, poor hygiene, or inadequate medical care warrant immediate reporting to protective services.

### Case Resolution

Given the concern for superinfection and further bleeding negatively impacting her quality of life, a goals-of-care discussion with the patient and family was held after which a shared decision was made to proceed with myiasis treatment. The hospice physician contacted a local tertiary care hospital, who put him in contact with a plastic surgeon whose research involved parasitic wound infections; he suggested occlusion with bacon or Vaseline as readily accessible therapeutic options. The hospice physician also consulted the hospice pharmacist, who recommended gentle irrigation with warm water. Because the larvae appeared to be superficial and easily accessible on examination, the provider opted to start with water irrigation to remove all visible larvae. A kerlix dressing soaked in betadine solution was then applied to the neck mass with each dressing change. The betadine dressings were used for two weeks and then stopped, after which the maggots returned though to a much lesser degree than before. The betadine dressings were restarted for an additional two weeks, after which the maggots did not return.

During this time, the hospice interdisciplinary team including the physician, nurse, social worker, and chaplain worked to balance RT's desire for control with her complex wound needs. There were concerns for self-neglect, and so much time was spent educating the patient on the importance of dressing changes to prevent infection. Nursing was also more involved in her dressing changes, which RT engaged with but would occasionally delay. Social work suspected that in addition to her fear of rebleeding, there was an element of denial as dressing changes forced her to directly engage with her advanced cancer. However, the team did not feel that a report to protective services for self-neglect was warranted. RT remained compliant with dressing changes and continued her alternative therapies

for her cancer. She continued a slow decline and passed away at the hospice residence four months after her hospice admission.

### Conclusion

Cutaneous myiasis is a well-known complication of necrotic malignant wounds; individuals suffering from head and neck cancer may be particularly susceptible. Wound myiasis can worsen symptom burden, and cause psychosocial distress for both patients and their caregivers. Although little HPM-specific literature exists on this topic, providers should have a working knowledge of the risk factors and treatment modalities available to manage cutaneous myiasis while providing interdisciplinary support for this complex condition, as timely management can significantly improve the quality of life of affected patients.

### Funding Information

No funding was received for this study.

### Author Disclosure Statement

No competing financial interests exist.

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