Verrucous Carcinoma vs. Aggressive Verruca Vulgaris: A Case Report

Cancerous transformation is a well-known issue in treating chronic wounds.

BY AMANDA MCGUIRE, DPM

Cancerous transformation is a well-known issue in treating chronic wounds. If a wound is not healing, a biopsy can help differentiate between various dermatological conditions affecting healing. Biopsies may be performed to better identify the specific characteristics of the lesion to be treated. Depending on the patient and his/her initial presentation, a biopsy may be performed at the beginning of treatment, or if wound care treatments are not closing the wound. One particularly rare transformation is verrucous carcinoma (VC), a variant of squamous cell carcinoma. It is a slow-growing cancer and can be difficult to characterize clinically as changes happen over a long period. Patients often have other reasons for unresolved wounds due to systemic factors, infection, and non-compliance with treatment. This case report highlights the need for aggressive treatment with a multidisciplinary approach to achieve improvement in a patient's wounds.[1]

Outside the cancerous realm, the pathophysiology of verruca vulgaris (VV) is viral. Human papilloma virus (HPV-2) is one of the common viral strains associated with plantar warts, though other HPV strains can also cause warts on the feet[4]. Advances in HPV vaccines have targeted strains acquired through sexual transmission, not specifically those causing plantar warts. There have been limited studies on the impact of these vaccines on the incidence of plantar warts caused by HPV 2. Fewer studies address the vaccine as a treatment for current infections, as this is not the usual mechanism of action for most vaccines.[2]

Other plantar wart treatments in the usual context of typical verruca vulgaris include salicylic acid, other chemical methods, hyfrecation, cryotherapy, laser therapies, surgical excision, and maceration techniques with duct tape. Studies suggest higher cure rates with the addition of oral therapies such as high-dose zinc or cetirizine.[3] More aggressive methods include topical cancer treatments like efudex 5%. Podiatrists often have their preferred combinations of these modalities for treating warts. However, none of these treatments are universally effective, making wart treatment a prolonged and laborious clinical challenge.[4]

If there is concern about a wound transforming into squamous cell carcinoma, a biopsy is essential. Lesions suspicious for VC may present an exaggerated cauliflower-like appearance with callused tissue and spongy, thrombotic areas that bleed profusely when debrided. VC often infiltrates previously normal-looking wounds, with more involvement in the surrounding skin than the wound base. Biopsies should capture representative areas of the wound; punch biopsies may suffice for smaller wounds, while excisional biopsies are better for larger ones.

Once a biopsy confirms VC, consulting dermatology or oncology is appropriate. VC treatment typically involves surgical resection, considered curative due to its local infiltration nature. This contrasts with common warts, which can recur anywhere on the body once the virus is present. Resection margins for VC follow the same rules as those for squamous cell carcinoma, and lesions should be staged on Breslow's scale before excision. Occasionally, lymph node biopsies are needed. VC is most commonly found in the oral mucosa, other mucosal areas, and chronic wounds, positioning podiatrists and wound care providers to promptly identify these lesions, obtain biopsies, and refer patients early to avoid disfiguring amputations and scars.[5]

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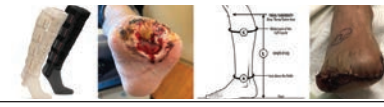

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Case Study

Some veterans presenting to the wound care clinic are often sent from long distances once local efforts have not been effective. In the recent case of a 53-year-old male patient, he was receiving care in his community for seven years before presenting to the wound care clinic for treatment. He has a history of uncontrolled Type 2 diabetes, now controlled to 7.6. This patient is also diagnosed with peripheral neuropathy, hypertension, and is on blood thinners due to prior deep vein thrombosis, and allergies to linezolid and vancomycin. He has had prior amputations as a result of osteomyelitis in the bilateral hallux.

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Figure 1: Initial Presentation (photos 1-3, left to right)

The patient is a business owner and struggles to stay off his feet and run his business.

The patient stated he had the left hallux amputated first, the stump became infected, and his right hallux started to ulcerate. He underwent revision of the left to a partial first ray amputation, and the right to a partial hallux amputation during the same surgery. He started to control his blood sugars and the wounds did heal for a short time.

The incisional areas then started to break down, and he had open wounds for 3-4 years before being referred to this wound care center. He states this is when the wounds started looking "different." (Figure 1). He underwent total contact casting, aggressive compression therapy, several off-loading modalities, and many wound care products with little improvement. He was taken off his blood thinner due to the large amount of bleeding he had during debridement.

He then presented to the VA, and his first punch biopsies were taken. The patient was also found to have elevated ESR and CRP without leukocytosis. X-rays indicated changes consistent with osteomyelitis and an MRI was ordered. His wounds also had some malodor and were found to have mixed anaerobes, methicillin-sensitive Staphylococcus aureus (MSSA), and no acid-fast bacteria (AFB) or fungal growth. He was started on local wound care and antibiotics.

The punch biopsy results were reviewed by the pathologist and dermatopathologist and ruled "most closely resembling verruca vulgaris; however, the dermis is not visualized, and an excisional biopsy would be more helpful to differentiate between VC and VV." Clinical pictures were sent to the dermatopathologist along with new excisional biopsies of both feet. The results were: Changes most closely resembling VC. The patient was then referred to dermatology and orthopedic oncology. Dermatology felt it would be extremely rare to have a case of VC in bilateral feet, developing independently of each other. There was also some exploration of the idea that Mohs surgery may be an option. Excisional biopsies were repeated by dermatology, discussed at their grand rounds, and ruled once again to be most consistent with VV. Once the ruling was that the wounds were not VC, orthopedic oncology recommended transmetatarsal amputation (TMA) or Symes for tissue coverage, and signed off the case.[5]

The patient did obtain MRI of bilateral feet with some delay due to scheduling. There was some concern for bony infiltration of the soft tissue mass in the left first metatarsal, but findings ultimately were most consistent with osteomyelitis and reactive changes in the remaining metatarsals. The right had similar findings involving the distal stump of the partial hallux amputation site.

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Figure 2: One week post-op (photos 4 and 5, left to right)

Figure 3: One Month PO Prior to Discharge from Skilled Nursing Facility (photo 6)

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The options for TMA, Symes, and below-knee amputation (BKA) were reviewed with the patient. The patient was strongly considering BKA on his left, as he was not interested in doing the same level of wound care he had been doing for the last seven years. After some discussion and consultation with the amputee rehab clinic, the patient opted for bilateral TMA.

The patient was hoping for the resolution of both wounds due to time constraints regarding his business. The patient strongly preferred to have his operation performed simultaneously on both feet to remove the soft tissue masses, ulceration, and osteomyelitis. His family had concerns about the patient's compliance outpatient and his ability to be non-weightbearing to both feet. The patient was planned for bilateral TMA and gastrocnemius recession, with the left being more proximal. Due to a 3-month gap between the initial consultation and surgical excision, the wound continued to enlarge on his plantar foot, necessitating a small flap for closure on the left foot. Four mm margins were used for the soft tissue, as they would be in the case of VC as an added precaution. An area of the left distal flap necrosed post-surgery. The area was debrided to healthy tissue bedside, and a wound vac was used during his 1-month stay at a short-term care facility located in the hospital (Figure 2).

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Figure 4: 2 Months post-op (photos 7 and 8, left to right)

During his stay, his right foot developed a small soft tissue infection with morganella morganii, which was treated by antibiotics tailored by infectious disease, and resolved. He was discharged from the facility one month after the operation with his right TMA healed and left TMA with a superficial wound with a granular base. The wound vac was discontinued before discharge (Figure 3).

The patient then was ambulating in a left CAM boot and right surgical shoe after discharge. The patient was intermittently compliant with this. He started to shower and was using a collagen dressing on the wound. A Puraply graft was ordered two months

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post-surgery and at the application visit, there were new changes to the wound periphery suggesting recurrence. One week after graft application, the verruca was clearly returning despite wound care, and he was prescribed high-dose zinc, and cetirizine. His wound regimen was changed to 5-fluorouracil (5-FU) applied to the wound and he was referred urgently back to dermatology (Figure 4).

Three months post-surgery, scout biopsies of the area were obtained. Three dermatologists and the dermatopathologist met to confirm the return of VV. The decision was then to discontinue the 5-FU due to concerns for tissue healing in favor of intralesional Bleomycin injections. Additionally, the HPV vaccination series commenced.

Six months post-surgery, he had a vacation planned between the biopsies and the initiation of the injections. Due to the patient's plans and dermatology availability, two months passed while the patient performed his own dressing changes with Iodosorb, Hydrofera Blue, or Aquacel AG. The patient alternated at his leisure and essentially treated with whatever treatment was convenient, despite formal instructions. Unfortunately, his right foot re-ulcerated. He had received his custom diabetic shoes with toe fillers and wore them exclusively on vacation without checking his feet. He had superficial ulcerations consistent with rubbing, but over the next two weeks, developed incisional verrucous lesions once again on the previously healed right foot (Figure 5).

The patient started to have a new odor and was found to have cat and other hair in the wound, consistent with polymicrobial infection, and was placed again on antibiotics, which resolved the infection. He then had his first Bleomycin injection, and once the right foot was found to be ulcerated, had injections in that wound two weeks later. He is now on his third round of injections and has his third round of the HPV vaccine due within the next few months. Overall, his wounds seem to be reducing in size with this regimen. (Figure 6)

This case also reveals how little we know about viral complications of wounds.

Figure 5: Right foot breaking down 6 months Post op (photos 9 and 10, left to right)

Figure 6: After 2 intralesional injections Bleomycin left foot, 1 on right foot (photos 11 and 12, left to right)

Systemically, the patient had not seen a primary care physician in ten years due to the frequent follow-ups he had been getting with his wound team in the community and his pharmacist, who was managing his diabetes medications. He has a lung nodule, cough, and progressive hoarseness which has plagued him as long as he has had these wounds. A pulmonology consult is now pending, and other factors are being considered for his immune compromise aside from his diabetes, whereas they were previously left unresolved.

As of the writing of this article, the patient has a new infection in the right foot that is being treated by podiatry and infectious disease. The patient may undergo another revision surgery of his right TMA stump if there are concerns for osteomyelitis. In wound care, some patients are yours for life!

This case highlights the importance of a close working relationship within the interdisciplinary team. Without close communication between the doctor and patient, and follow-up with colleagues, the patient may have had longer delays in treatment. It also high-

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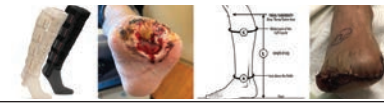

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lights the importance of early and thorough biopsy, as well as high clinical suspicion for complicating factors in slow wound healing, and not just focusing on patient non-compliance as a reason for poor healing.

This case also reveals how little we know about viral complications of wounds. Most of the literature is not high-powered research focused on wound care specifically, and therefore there is no real consensus on the optimal way to approach wounds complicated by warts. This makes verruca a good topic of podiatric research as it intersects wound care, dermatological conditions, surgery, and infectious disease. It would be helpful to quantify the incidence of wounds that are complicated by verrucous lesions.

Another study may aim to look at the incidence of young adults presenting to podiatry or dermatology with warts, and see if these children have received the HPV vaccine, versus rates of warts prior to the introduction of the vaccine. By better understanding these more common occurrences of warts, we may be able to understand and develop better treatment modalities for both simple and more involved wart cases, such as this case.[5] **PM**

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Dr. McGuire is a Staff Podiatrist at The Minneapolis VA Medical Center, Minnesota. She is a graduate of the Scholl College of Podiatric Medicine and completed her residency training at KSB Hospital in Dixon, Illinois. She is a diplomate of both the American Board of Podiatric Medicine, and the American Board of Foot and Ankle Surgeons.