

# Verrucous herpes treated as condyloma acuminata: A case of cognitive bias



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**Key words:** cognitive bias; condyloma acuminata; herpetic dermatitis; immunosuppression; medical error.

## INTRODUCTION

Cognitive biases influence health care decision making and patient care and can lead to delayed diagnoses as well as significant patient morbidity. We present a case of an immunocompromised patient with verrucous herpetic dermatitis who was treated for 2 years for anogenital warts before the correct diagnosis was made. Verrucous eruptions in the anogenital area are most commonly warts due to human papilloma virus. It is important, however, to consider a broad differential when assessing verrucous eruptions, particularly in the immunocompromised.

## CASE REPORT

A 62-year-old man presented for his fourth dermatology clinic follow-up for a painful rash involving the perianal and gluteal skin. He had a history of HIV (CD4 cell count  $>500$  cells/mm<sup>3</sup>, viral load undetectable) and renal transplantation with an immunosuppressive regimen of abacavir/dolutegravir/lamivudine, mycophenolate mofetil, tacrolimus, and prednisone. He had a remote history of cytomegalovirus viremia, which resolved after treatment with valganciclovir, and syphilis, treated with 2 doses of intramuscular penicillin G. There was no known history of herpes simplex virus.

During the past 2 years, he had been seen a total of 6 times by the dermatology service; first in the emergency room (ER) prior to admission, next on inpatient consults and 4 times in our clinic; each time with the complaint of a painful intragluteal rash. On initial ER consultation he presented with round, eroded plaques with surrounding hyperpigmentation. The dermatology ER note documents a differential of herpes simplex virus, syphilis, and other infectious etiologies, but due to the absence of

### Abbreviations used:

CA: condyloma acuminata  
ER: emergency room

grouped vesicles and nonclassical distribution, a diagnosis of condyloma acuminata (CA) was made. No additional workup was recommended or performed. During the inpatient dermatology consult, the diagnosis of anogenital warts was carried forward, and he was started on zinc oxide for a superimposed intertrigo. At his first clinic visit, his rash had continued to ulcerate and developed an overlying yellow crust. A secondary infection was suspected, so bacterial culture was performed that demonstrated *Streptococcus*, and he was treated with doxycycline and topical mupirocin. At the second clinic visit, moist exophytic plaques were noted, and the diagnosis of condyloma was carried forward again; cryotherapy was performed. His next visit showed moderate improvement in the rash and no new therapies were pursued. Throughout these 5 encounters, he was evaluated by 4 different dermatology residents and 3 faculty members, all with the diagnosis of perianal warts and intertrigo. He had been treated with numerous agents, all without significant improvement.

At his sixth and most recent visit, verrucous plaques with moist erosions and hypopigmented scars were observed (Fig 1). Despite the previous treatments, the rash had become increasingly painful, and multiple ulcerations were “leaking.” The initial diagnosis of CA was reassessed, and a shave biopsy was performed, which showed acanthosis, superficial erosions with dense inflammation, and herpetic-type viral cytopathic

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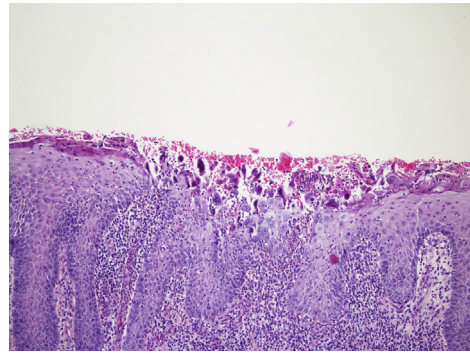
**Fig 1.** Intragluteal rash with verrucous plaques, moist erosions, and hypopigmented scars.

features, including multinucleated giant cells with nuclear molding (Figs 2 and 3). There was no evidence of human papillomavirus; immunohistochemical staining showed no evidence of spirochetes, and rapid plasma reagin was negative. He was diagnosed with herpetic dermatitis and started on valacyclovir with prompt improvement.

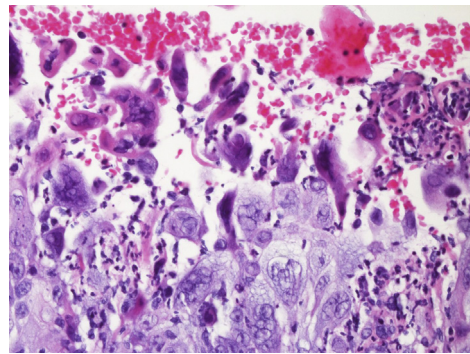
## DISCUSSION

The diagnosis of CA is usually made clinically by the presence of exophytic, papillomatous, verrucous, or hyperkeratotic papules.<sup>1</sup> While anogenital warts are common, a broad differential and low threshold to biopsy are important when assessing the immunocompromised, as they can have atypical presentations and increased susceptibility to malignant transformation. Appearing as a warty growth, verrucous carcinoma, a variant of squamous cell carcinoma, is associated with human papilloma virus and is commonly seen on the genital mucosa.<sup>2</sup> Syphilis can have a wide array of clinical presentations with verrucous, papillated, and cauliflower-like variants being reported in the literature.<sup>3,4</sup> Herpes vegetans, an atypical presentation of herpes simplex virus, also appears as a verrucous or exophytic lesion.<sup>5</sup> It most commonly affects immunocompromised patients, and can be confused with CA or a verrucous malignancy.<sup>6</sup>

Atypical morphologies with overlapping presentations can pose a diagnostic and therapeutic challenge. Physicians often use pattern recognition



**Fig 2.** Acanthosis with dense inflammation and superficial erosion. (Hematoxylin-eosin stain; original magnification:  $\times 10$ .)



**Fig 3.** Herpetic-type viral cytopathic features including multinucleated giant cells with nuclear molding. (Hematoxylin-eosin stain; original magnification:  $\times 40$ .)

and heuristics to make diagnoses, a strategy coined as System 1 or ‘fast thinking’ by psychologist Kahneman.<sup>7</sup> Fast thinking relies on intuition and mental short-cuts, allowing quick decisions. In medical practice, heuristics can affect physicians’ decision making and potentially lead to biases, resulting in errors in patient care. Therefore, it is crucial to pause and consider a broad differential during both initial diagnosis and follow-up. Reengaging with the differential and using reflective reasoning to consciously consider the evidence is integral when patients are not responding to treatment as expected. A systematic approach, including reviewing the previous records, can counteract these heuristic biases by reminding physicians to notice subtle hints, think critically about refractory cases, and decide if alternate diagnoses should be explored.

This patient’s rash was incorrectly labeled as CA, and this diagnosis carried forward through his subsequent visits. His clinical history of immunocompromised state and atypical presentation were not considered, while they should have warranted a

thorough workup. Although alternative diagnoses were documented during the initial consult, no further evaluation was done, and they were not reconsidered until 2 years later. Verrucous lesions having similar clinical features may have different etiologies, highlighting the importance of a broad differential and a high level of clinical suspicion.

Availability bias, which relies on the mental shortcut of immediate examples that come to mind, can lead physicians to consider prevalent diseases more frequently and forgo the less common. Anchoring is the tendency to stick with the initial impression, even when new information becomes available. These biases are a trap into which even the most experienced physicians can fall victim and studies have found that anchoring and availability are some of the most common biases associated with diagnostic inaccuracies.<sup>8,9</sup> We believe both contributed to our patient's delay in diagnosis. Anchoring is often accompanied by confirmation bias, the tendency to interpret new data as confirmation of the preliminary diagnosis. Serious problems can arise when initial impressions are incorrect, as these biases together can cause physicians to confirm their initial impressions, become "anchored" in their diagnosis, and unconsciously ignore contradictory evidence and lead to further management errors. Busy clinics with multiple providers, who have inadequate time to review previous notes are not uncommon, and in most electronic medical records, finding inpatient and ER notes requires extra steps and a more thorough search. Though it takes extra time, a careful review of a patient's records and a comprehensive differential can improve patient outcomes. After years of ineffective treatment, our patient was eventually diagnosed with a verrucous herpetic dermatitis and started on appropriate therapy.

This case is a reminder that different dermatologic conditions may present similarly, and our initial impressions and past experiences can influence our diagnosis. Biases have the potential to seriously impact the quality, consistency, and accuracy of diagnoses and therapeutic management. This case highlights the importance of being aware of these biases, and importantly, sharing difficult cases, even when they include errors, so that we all can learn.

#### Conflicts of interest

None disclosed.

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