SHORT COMMUNICATIONS

Toluidine Blue for Extramammary Paget's Disease in Mohs Micrographic Surgery

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ABSTRACT

Introduction: We report an elderly gentleman with Extramammary Paget's disease (EMPD) treated with Mohs micrographic surgery (MMS) using Toluidine blue staining intraoperatively as to detect the Paget's cells.

Case Presentation: An elderly man presented with an erythematous plaque on the left inguinal fold which showed in-situ EMPD on histopathological examination. Investigations for secondary EMPD were negative and the patient was treated with MMS. During MMS, the specimens from the patient were stained using Toluidine blue in order to detect the Paget cells and to determine the appropriate negative margin. At 4 years follow up the patient is free of recurrence.

Conclusion: Toluidine blue is a fast, user-friendly dye that can be used intraoperatively during MMS as to detect Paget cells and thus to determine the appropriate negative margin.

INTRODUCTION

Extramammary Paget's Disease (EMPD) is a rare skin malignancy that can pose a treatment challenge stemming from the difficulty of identifying tumor margins due to subclinical extension. As such, conventional surgical management has shown recurrence rates of 20-60% while with the use of Mohs micrographic surgery (MMS) lower recurrence rates (12.2%) can be achieved.[1] In MMS one limiting factor is the visualization of Paget cells in frozen specimens stained with hematoxylin and eosin (H&E). Furthermore, immunohistochemical stains are often not employed in the settings of MMS due to significant start-up costs, long incubation times, difficulty with antibody reagent consistency and staining reproducibility.[2]

The presence of mucin in Paget cells lends itself to be visualized with special stains other than H&E, including Alcian blue, PAS, mucicarmine, and Toluidine blue.[3] We present a case of EMPD treated with MMS using Toluidine blue.

CASE PRESENTATION

The patient was an otherwise healthy 68-year-old white man who presented with a 3-year history of a slow growing, pruritic lesion on the left groin. On clinical examination

Figure 1. Frozen section with H&E staining of EMPD (100x).

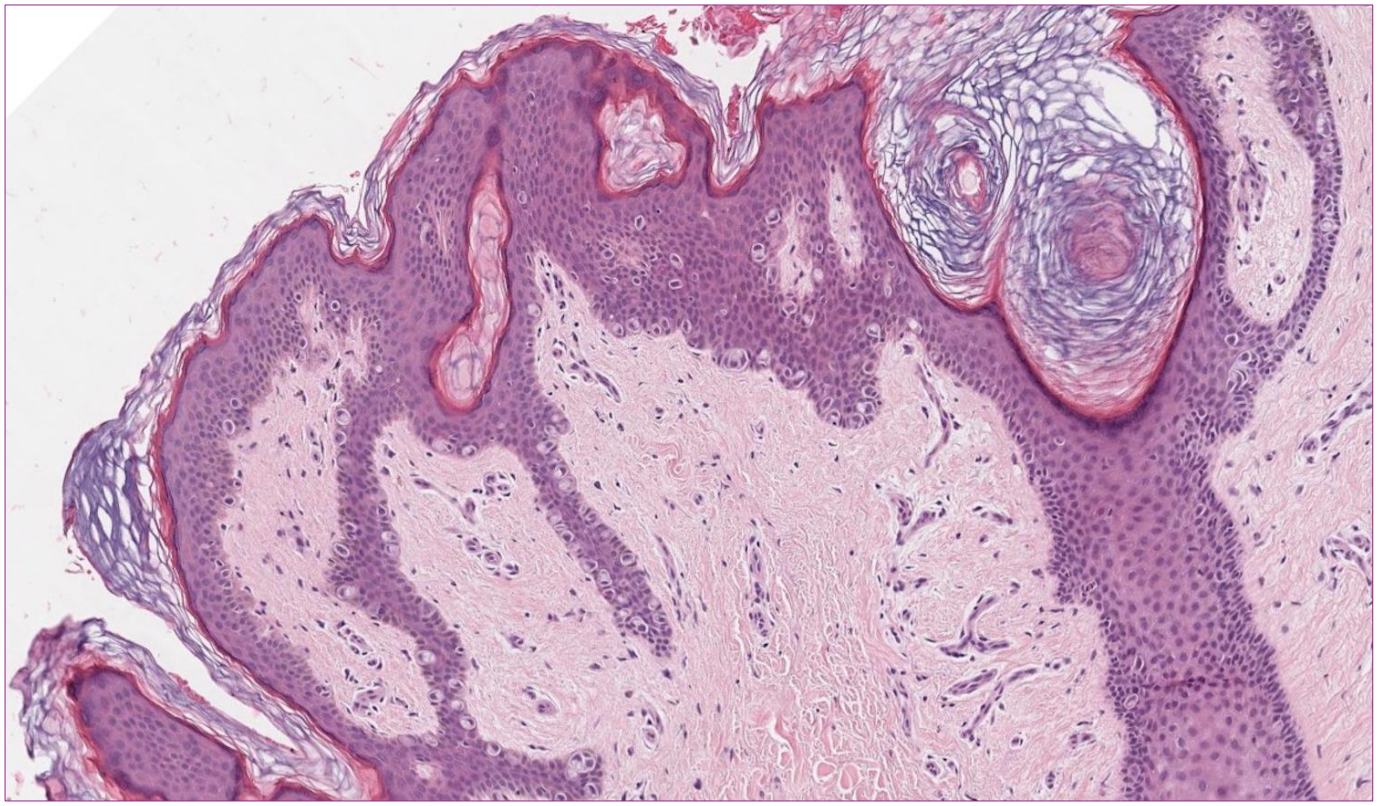
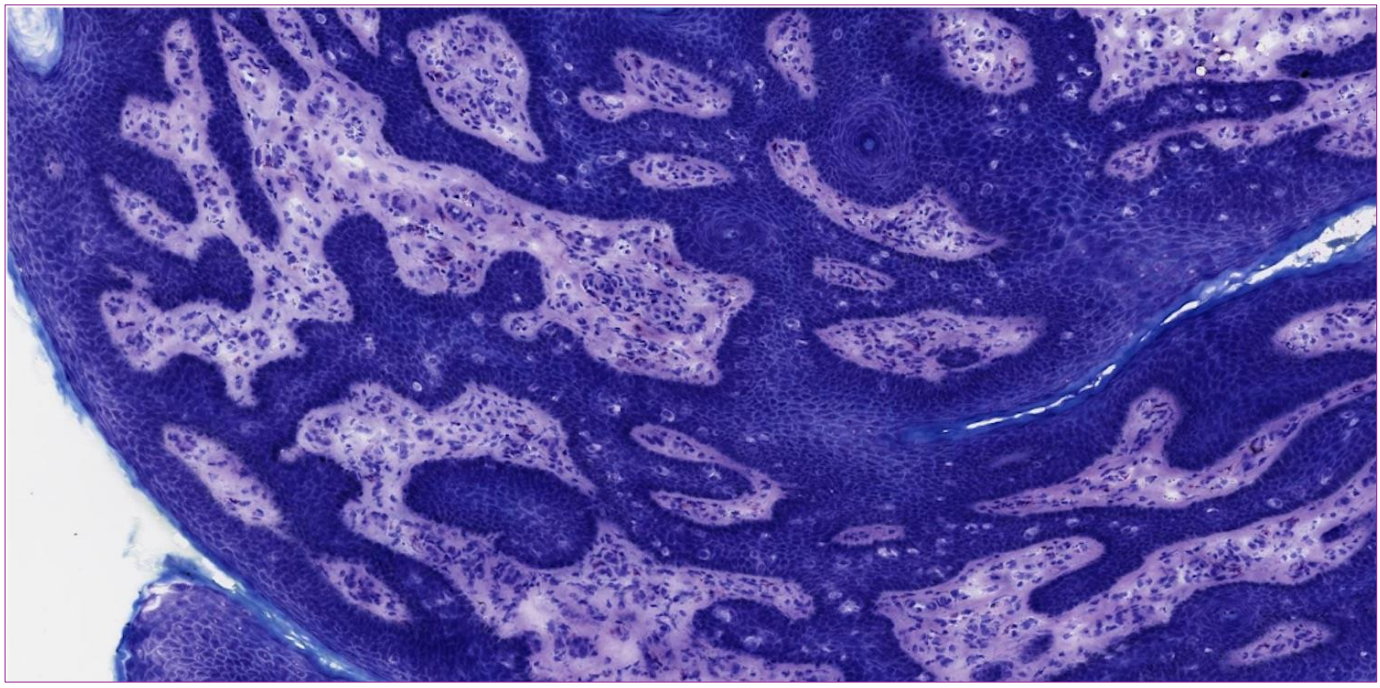


Figure 2. Frozen section with Toluidine blue staining of EMPD (100x). The Paget cells show metachromasia making them easily detectable.



there was a 4.0 cm by 3.0 cm erythematous plaque in the left groin involving the inguinal folds and no lymphadenopathy. Histopathological examination showed in situ proliferation of malignant glandular cells strongly positive for her2-neu and cytokeratin-7 consistent with in-situ EMPD. Extensive work up to asses for secondary EMPD was negative. The patient was treated with MMS requiring 4 stages with a final defect of 10.5 cm by 9.4 cm repaired by primary linear closure. During the MMS the frozen sections were stained with Toluidine blue which allowed for easy identification of the intraepidermal Paget cells. Figure 1 compares H&E staining versus figure 2 showing Toluidine blue staining on the frozen sections. He is 4 years post-surgery and has no clinical evidence of recurrence.

DISCUSSION

Treatment of EMPD has traditionally been challenging due to high recurrence rates. MMS may be the best alternative, but it still has its limitations as recurrence rates remain high. Part of this may be related to inability to identify remnant tumor when inspecting fresh tissue specimens with H&E. This can be exemplified by cases where H&E biopsies are negative for EMPD while specimens stained with cytokeratin 7 reveal a positive diagnosis.[4] Immunological markers can increase sensitivity and specificity but are time consuming, and not easily available for MMS.

Therefore, a non-immunohistochemical stain that may easily identify tumor could be better suited for the management of EMPD by MMS. Toluidine blue is a metachromatic stain highlighting the mucin in Paget cells and allows for rapid identification of the cells in EMPD. Another advantage of Toluidine blue is its lower staining times.[5] Given our report, we propose this stain as a viable alternative for the management of EMPD by MMS.

However, our case has several limitations including being a single case report, and the lack of a direct comparison arm. Further research including larger trials comparing the Toluidine blue to the standard H&E is necessitated.

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