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Buschke-Löwenstein Tumor: Contribution of MRI in Locoregional Assessment – A Case Report

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Abstract | **Case Report**

Buschke-Löwenstein tumor (BLT) is a rare, locally invasive, and potentially degenerative form of condyloma acuminatum associated with chronic human papillomavirus (HPV) infection. It is characterized by slow-growing, exophytic lesions with a massive, often malignant-like appearance, despite initially benign histology. Magnetic resonance imaging (MRI) plays a crucial role in assessing locoregional extension, treatment planning, and follow-up. We report a case of extensive BLT involving the anogenital and perineal regions, with a review of the literature.

Keywords: Buschke-Löwenstein Tumor, Human Papillomavirus, Magnetic Resonance Imaging.

INTRODUCTION

BLT, or giant condyloma acuminatum, was first described in 1925 by Buschke and Löwenstein [1]. Although histologically benign, this tumor demonstrates aggressive local behavior. It primarily affects the anogenital region, with a male predominance, and is caused by chronic HPV infection, particularly types 6 and 11 [2]. The risk of transformation into squamous cell carcinoma is significant, estimated between 30% and 50% [3]. Imaging, particularly MRI, is essential for evaluating tumor extent and guiding management.

CASE REPORT

A 56-year-old married man, father of two and a chronic smoker (10 pack-years), presented with a slowly growing, exophytic perianal lesion evolving over approximately ten years. The lesion had progressively enlarged and was associated with general health deterioration, but no fever or signs of infection.

Clinical examination showed a conscious, hemodynamically and respiratory stable patient. Perineal inspection revealed confluent, fleshy masses involving the penis, penile base, scrotum, and left inguinal region, extending toward the anorectal area. The lesion formed a large, cauliflower-like mass suggestive of locoregional tumor infiltration. Anoscopy and rectoscopy showed extension of the lesion up to 3 cm beyond the anal margin, without visible mucosal abnormalities (no erythema, ulceration, or obvious neoplasia).

Blood work revealed microcytic anemia (Hb: 8.8 g/dL; MCV: 76.9 fL), moderately elevated CRP (20 mg/L), and moderate leukocytosis (12,980/mm³). Platelet count and tumor markers (CEA, CA 125, CA 19-9) were normal. Serologies for HIV, syphilis, and hepatitis B and C were negative.

Pelvic MRI revealed a large soft-tissue mass involving the anoperineal and left gluteal regions, extending into the lower rectum. The lesion was isointense on T1, mildly hyperintense on T2, and showed marked diffusion restriction with heterogeneous gadolinium enhancement. Macrocalcifications appeared hypointense on all sequences. The lesion infiltrated the gluteal soft tissues and encased the penile urethra. A similar mass was also noted in the pubic and left penoscrotal soft tissues. Associated pelvic-perineal collateral circulation and bilateral inguinal lymphadenopathy were also observed.

Histological analysis of a biopsy showed epithelial hyperplasia with acanthosis, papillomatosis, and parakeratotic hyperkeratosis. Koilocytes were present, confirming HPV infection. No signs of malignant transformation were observed.

Due to the extensive nature of the lesion, complete surgical excision was deemed unfeasible. A diverting sigmoid colostomy was performed, followed by chemoradiotherapy. Clinical stabilization was observed at a two-month follow-up.

DISCUSSION

Buschke-Löwenstein tumor (BLT), also known as giant condyloma acuminatum, is a rare clinical entity that lies at the borderline between benign and malignant disease. Described in 1925 [1], BLT is typically a massive, slow-growing, yet locally invasive and destructive verrucous lesion of the anogenital region. It is strongly associated with chronic HPV infection, especially types 6 and 11 [2]. Despite being considered low-risk genotypes, malignant transformation to squamous cell carcinoma occurs in 30%–50% of cases [3].

BLT predominantly affects men, especially those who are immunocompromised or have risk factors such as smoking, sexual promiscuity, or poor hygiene. Its evolution over many years—as in our case—is typical. The lesion often presents as a large, exophytic, papillomatous mass resembling a cauliflower, which can extend to nearby structures such as the scrotum, penis, inguinal folds, and perineum. This aggressive local behavior frequently mimics malignancies such as verrucous or invasive squamous cell carcinoma.

MRI is the imaging modality of choice for assessing locoregional tumor extension in BLT. It enables precise mapping of the involvement of soft tissues, the anal canal, rectum, urethra, and adjacent urogenital structures. In our case, MRI demonstrated a large soft-tissue mass with isointensity on T1, mild hyperintensity on T2, and marked diffusion restriction with a heterogeneous enhancement pattern—features reflecting high lesion cellularity. The presence of macrocalcifications and urethral involvement further emphasized the locally aggressive behavior. These findings are consistent with those reported by Zhou *et al*., [6], who highlight MRI's superiority in staging and treatment planning.

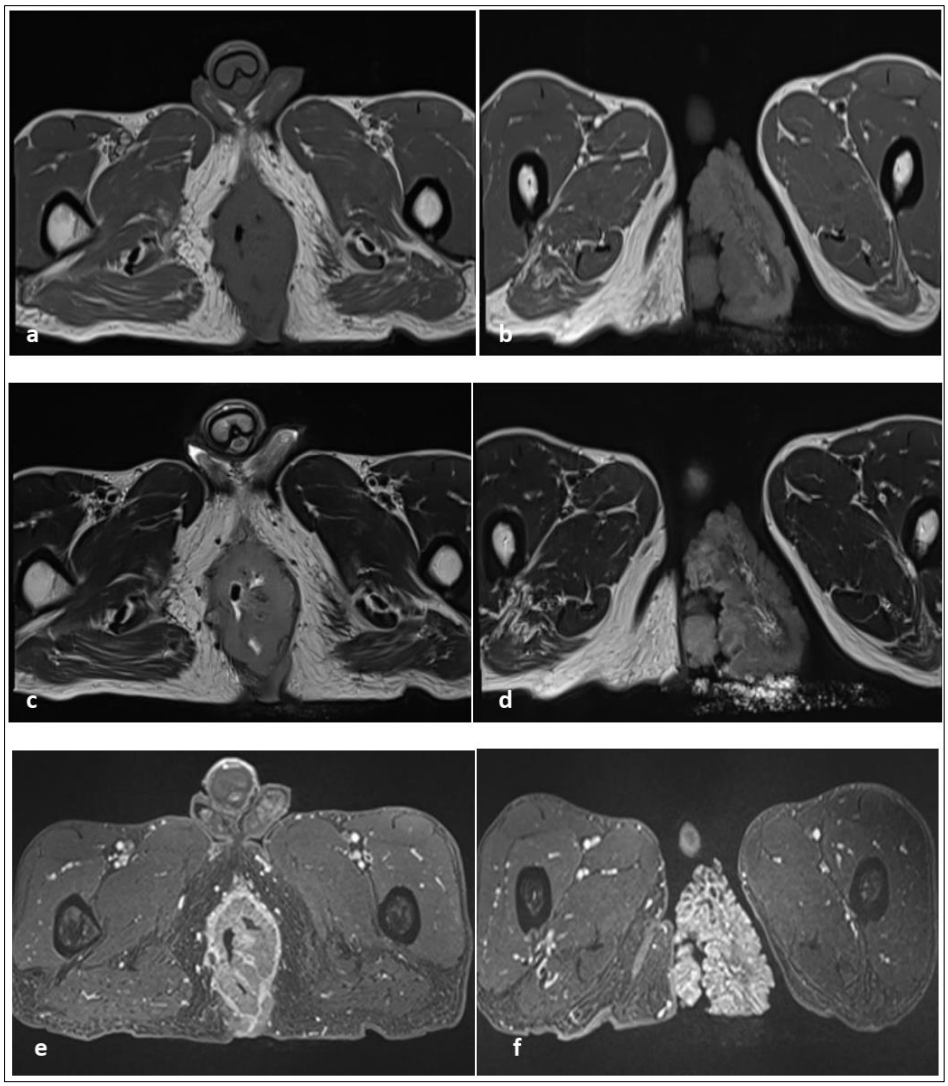

Figure 1: Axial pelvic MRI showing a large soft-tissue mass involving the left anoperineal and gluteal regions, extending to the lower rectum. The lesion appears isointense on T1-weighted images (a, b), slightly hyperintense on T2-weighted images (c, d), and demonstrates heterogeneous enhancement after gadolinium administration (e,f)

Histological confirmation is essential. BLT typically shows papillomatous, acanthotic squamous hyperplasia with parakeratotic hyperkeratosis and koilocytosis. Absence of malignancy on histology—as in our case—supports the diagnosis of BLT. However, due to the focal nature of malignant transformation, a single biopsy may underestimate neoplastic progression, making comprehensive clinical and radiological assessment critical.

Treatment is challenging and requires a multidisciplinary approach. Complete surgical excision with clear margins is the preferred curative strategy [7]. However, this is often unfeasible in extensive disease, and chemoradiotherapy may serve as an alternative or neoadjuvant approach [8]. A diverting colostomy, as performed in our patient, is often indicated to reduce infection risk and facilitate local wound care. Long-term follow-up is essential given the risks of recurrence or delayed malignant transformation.

CONCLUSION

Buschke-Löwenstein tumor presents a diagnostic and therapeutic challenge. Despite its benign histology, it is marked by locally invasive growth and a substantial risk of malignant transformation, reported in 30%–50% of cases [3-7]. MRI plays a pivotal role in defining tumor extent, evaluating the involvement of surrounding anatomical structures, identifying features suggestive of degeneration, and guiding therapeutic decisions [6-8]. Histological analysis remains essential but may underestimate malignant foci if not representative [2-5]. When feasible, complete surgical excision with negative margins remains the only curative treatment [7]. For locally advanced cases, chemoradiotherapy may be considered as a primary or neoadjuvant therapy [8]. Rigorous long-term follow-up is vital to detect recurrence or malignant progression. This case highlights the importance of a multidisciplinary strategy involving clinical, radiologic, and histopathologic expertise to optimize management of this rare but serious condition.

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