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Commentary

Scrotal Lymphangioma in Pediatrics: A Management Strategies

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DESCRIPTION

Lymphangiomas are benign congenital malformations of the lymphatic system, arising due to abnormal development and dilation of lymphatic channels. These lesions may be classified as macrocystic, microcystic, or mixed, depending on cyst size and tissue involvement. Although they can occur anywhere in the body, the majority are located in the head and neck region, with scrotal lymphangioma representing a rare clinical entity, accounting for only 4% of all lymphatic malformations and occurring in approximately 1 in 12,000 individuals. Their rarity in the pediatric population contributes to a lack of standardized treatment guidelines and often leads to individualized therapeutic decisions.

A six-year-old boy presented with progressive bilateral scrotal swelling noted over a four-year period. His medical history included bilateral cryptorchidism, surgically corrected at the age of two. The onset of scrotal swelling followed shortly after this operation. Over time, the swelling increased gradually in size. The child also experienced recurrent episodes of localized scrotal infection, occurring two to three times annually, managed with antibiotics. On a few occasions, spontaneous rupture and drainage of clear fluid from the scrotal skin were reported. Physical examination revealed pronounced bilateral scrotal enlargement with a gyri-like skin pattern composed of fluid-filled cystic nodules of translucent to bluish appearance. Both testes were palpable and normal. No signs of inguinal hernia or hydrocele were present, and systemic examination was unremarkable.

Ultrasound imaging showed multiple small anechoic cystic lesions within the dermis and subcutaneous layers of the scrotal wall. Color Doppler imaging demonstrated no internal vascular flow. MRI provided further delineation of the lesion extent, confirming the presence of high-signal-intensity cystic structures localized to superficial layers, sparing the testes and spermatic cord. Punch biopsy of scrotal skin under local anesthesia revealed dilated lymphatic channels in the dermis and subcutaneous tissue, consistent with lymphangioma. Histopathology showed flat endothelial cell lining and proteinaceous fluid content, with areas of lymphocytic inflammation.

Given the recurrent symptoms and significant cosmetic impact, a decision was made to perform surgical excision. Under general anesthesia, a circumferential scrotal incision was made at the perineal junction, followed by careful dissection of the affected tissues. Testes and associated structures were preserved. The entire lesion was excised, and layered wound closure was performed with placement of a drain to prevent fluid accumulation. Postoperative recovery was uneventful. The drain was removed on the second day, and the patient was discharged on day three. Follow-up at two weeks, one month, and subsequent intervals up to 24 months revealed no recurrence, excellent wound healing, improved scrotal contour, and high parental satisfaction with the outcome.

Scrotal lymphangiomas are exceedingly rare and typically present as translucent vesicles clustered in a pattern resembling "frog spawn." The distinction between congenital and acquired forms is important; congenital forms arise from failure of lymphatic sac connections during embryogenesis, whereas acquired types may result from lymphatic obstruction due to trauma, surgery, or infection. In the present case, the temporal association with prior orchidopexy suggests a potential acquired component, possibly from disrupted lymphatic drainage post-surgery.

The pathophysiology involves progressive accumulation of lymphatic fluid within abnormally dilated channels, leading to cyst formation. Most lesions are confined to the superficial scrotal wall, as in this patient, and rarely involve deeper tissues or genital structures. The most common symptoms include painless swelling, occasional infection, and in some cases, spontaneous fluid leakage. Despite being benign, these lesions may cause significant psychosocial distress and discomfort, especially in children. Diagnosis is primarily clinical, supported by imaging. Ultrasound is the first-line modality, offering detailed views of cystic structures and their vascularity. MRI provides superior soft-tissue contrast and is valuable for preoperative planning, particularly for delineating lesion extent. Histological confirmation is useful for definitive diagnosis, particularly in atypical cases.

Treatment options vary and are often dictated by lesion type, size, location, and patient symptoms. Surgical excision remains the gold standard for accessible, localized, and symptomatic

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lesions, offering the highest chance of complete resolution. However, recurrence can occur if the lesion is not entirely removed, particularly in deeper or more diffuse malformations. Long-term follow-up is essential due to potential for recurrence and the need to monitor for late-onset complications. In this case, the child remained recurrence-free for two years' post-surgery with no infections or further drainage episodes, indicating a favorable prognosis.

CONCLUSION

Scrotal lymphangioma in pediatric patients is a rare but important differential diagnosis in children presenting with chronic or recurrent scrotal swelling. Accurate diagnosis requires high clinical suspicion, supported by targeted imaging and, when needed, histological assessment. Surgical excision remains the most effective treatment for symptomatic and localized lesions. However, evolving therapies such as sclerotherapy and systemic agents offer new avenues for less invasive treatment, particularly in complex or diffuse presentations. As our understanding of lymphatic malformations expands, more standardized and evidence-based treatment protocols will be needed to guide management and improve patient outcomes.