Denouement and Discussion

Pediatric Granular Cell Tumor

The biopsy specimen revealed a well-defined dermal proliferation of large polyhedral cells with abundant eosinophilic granular cytoplasm and centrally located vesicular nuclei. The cells were arranged in cords and surrounded by a dense collagenous stroma (Figure 2 and Figure 3). No significant cellular atypia or degenerative changes were seen. The cells stained positive for S100, which is a protein found in cells of neural crest origin. The findings were consistent with a granular cell tumor.

Granular cell tumors are uncommon neoplasms felt to be of neural crest origin, although there is some controversy as to their histogenesis, with reports of muscular, histiocytic, fibroblastic, and pericytic origin.[1,2] The most common location to find these tumors is in the mouth, particularly on the tongue, although up to 44% are found on the skin or subcutaneous tissue. Additionally, granular cell tumors can be found in internal organs, particularly the aerodigestive tract.[3] The typical presentation of granular cell tumor is a single, sessile, asymptomatic skin-colored or red-brown papule or nodule, often less than 3 cm. The clinical differential diagnosis includes a variety of benign and malignant growths including epidermoid cyst, melanocytic nevus, leiomyoma, and basal cell carcinoma. Granular cell tumors are most common in the fourth to sixth decade; congenital and pediatric cases are rare. There is a slight female predominance, and granular cell tumors are somewhat more common in black individuals. Malignant granular cell tumors are rarely reported. These tend to be more deeply seated and larger (often >5 cm) and grow rapidly or recur after incomplete excision.[4]

Histologically, granular cell tumors are unencapsulated, ill-defined proliferations of large polyhedral cells arranged in sheets or cords. The cells have distinct borders and small, round, central nuclei with abundant granular eosinophilic cytoplasm.[1,2] These granules are made up of phagolysosomes with granular and membranous debris. In addition to positive S100 staining, the cells stain strongly positive with periodic acid–Schiff stain, NKI-C3, p75, and CD68.[3,5] The overlying epithelium may be verrucous or have marked pseudoepitheliomatous hyperplasia, leading to an erroneous diagnosis of squamous cell carcinoma when superficial biopsies are performed. Granular cell change has also been reported in a number of epithelial and mesodermal tumors and should not be confused with granular cell tumor. Features that suggest malignant granular cell tumor include increased cellularity, cytologic atypia, frequent mitotic figures, and necrosis. However, histologic criteria for malignancy are not well defined, and some malignant granular cell tumors have bland histologic findings.

The treatment of granular cell tumors is complete surgical excision. Prognosis is excellent because of the tumor's slow growth and rare malignant potential. Recurrence rate is approximately 8% when tumor-free margins are obtained. Tumor recurrence is thought to be due to perineural invasion via perineural lymphatics. If resection fails to produce tumor-free margins, the rate of recurrence of granular cell tumors increases to 21% to 50%.[6]

Although uncommon, pediatricians should be aware of this benign tumor and its ability to mimic more common entities such as epidermoid cyst or melanocytic nevus. The diagnosis of granular cell tumor should be considered when faced with an asymptomatic papule or nodule in a child, especially on the face. Biopsy is necessary for diagnosis and allows for appropriate follow-up and avoidance of overtreatment.

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