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Neurothekeoma

Soft tissue tumor lesions are uncommon in the pediatric age group. They differ from adult's counterpart in frequency, anatomical site and prognosis. In children, a dermal nodule could represent a fibrous tumor, histiocytic tumor, lymphocytic tumor, melanocytic tumor or a tumor of neural origin. Neurothekeoma is a rare benign soft tissue tumor with distinctive histological features commonly located on the upper extremity or the head and neck region in children. Originally thought to arise from peripheral nerve sheath, it has been postulated that neurothekeomas are of fibrohistiocytic differentiation. Based on histology, immunohistochemical findings and amount of myxoid matrix present, three variants of neurothekeoma are described: 1) myxoid, which is the most common variety, 2) cellular and 3) mixed type. The classic myxoid type, is encapsulated, characterized by myxomatous changes, less cellularity with well-circumscribed spindle cells in a myxoid matrix associated with multinucleated giant cells. The cellular type is not encapsulated, the cells are epithelioid with eosinophilic cytoplasm and rare mitosis. Cellular neurothekeomas can be locally invasive with perineural and vascular invasion, but no locoregional metastasis. The mixed type of neurothekeoma has varied cellularity with focal myxoid regions. Clinically, neurothekeomas are slow-growing asymptomatic lesions, but may be accompanied by pain upon pressure. Though commonly dermal, mucosa and submucosal lesions have also been described. Neurothekeomas tend to affect females more often than males, usually in the second and early third decades of life. Age at presentation can be between 15 months and 84 years. The most common location is the upper extremity, followed by the head and neck region, and lower extremity. Neurothekeoma clinically presents as a superficially located skin-colored, pink, red, or brown well-circumscribed papule or nodule measuring less than 2 cm. Management of neurothekeomas consists of complete surgical excision with microscopic negative margins. Incomplete removal of the lesion will lead to recurrence in approximately 15% of patients. There are reports of multiple neurothekeomas presenting concurrently. It is almost impossible to make the diagnosis of a neurothekeoma preoperatively, unless the patient has suffered a previous excision of such dermal tumor. As neurothekeomas are considered benign lesions, the prognosis is excellent with very low recurrence rate following complete surgical excision.

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Renal Medullary Carcinoma

Renal medullary carcinoma (RMC) is a rare and highly aggressive neoplasm that affects African American adolescents and young adult occurring almost exclusively in children with sickle cell trait or sickle cell hemoglobinopathy. Sickle cell trait is a risk factor for several conditions including chronic kidney disease, RMC, venous embolism and sudden death. Most patients present between the ages of 11 and 39 years, with males affected 2:1 ratio. Most common presenting symptoms for renal medullary carcinoma are gross hematuria, flank pain, weight loss and abdominal mass. RMC is characterized for early and widespread metastases. RMC arises from the renal papilla or calyceal epithelium triggered by chronic medullary hypoxia. Imaging of RMC commonly identifies a mass, more often in the right-side kidney, with an average size of 7 cm associated with satellite lesions and intratumoral necrosis. The most common imaging appearance of RMC is a poorly marginated, infiltrating mass abutting the pelvocaliceal system. This tumor is typically associated with a pseudocapsule with well-defined margins. Lung metastases have an atypical imaging appearance with the most common pattern being pulmonary lymphangitic carcinomatosis and nodules with indistinct margins being more common than nodules with distinct margins. Pathologically, RMS is an infiltrative tumor extending from the renal pelvis. These tumors comprise sheets of poorly differentiated cells commonly found to have a reticular growth pattern and adenoid cystic component with an infiltrate of neutrophils. Visualization of sickle red blood cells is pathognomonic for RMC. Most RMC are associated with a loss of SMARCB1/INI1 occurring through a chromosomal translocation or deletion that results in loss of protein expression identifiable by immunohistochemistry. The management of RMC is radical nephrectomy with retroperitoneal lymph node dissection followed in most cases by systemic chemotherapy. At the time of diagnosis 70% of patients have local lymph node involvement with one site of metastatic disease and 30% have two sites of metastatic involvement, most commonly lymph node, lung, liver or the contralateral kidney. Cytotoxic chemotherapy with platinum-based regimens has demonstrated partial and complete responses with clinical benefit in several case series. No evidence points to the benefit of screening patients with sickle cell trait for RMC because no feasible schedule and modality of screening would have an increase chance of identifying presentation of disease at an early stage. No effective measure exists for prevention of this type of renal malignancy. RMC carries a dismal prognosis with less than 5% surviving longer than 36 months.

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Epidermolysis Bullosa

Epidermolysis bullosa (EB) is a spectrum of rare, inherited, blistering bullous skin disorders primarily affecting the skin and pharyngoesophageal mucosa. EB affects approximately two to 4 per 100,000 children each year in the USA. EB is caused by a mutation in the genes that encode any of the structural components of keratinocytes and dermoepithelial junction. The mutation causes changes in proteins that are responsible for adhesions defects between cutaneous structures leading to blister formation. Autoantibodies to collagen VII binding to the anchoring fibril zone and inducing mucocutaneous blistering have been found in the acquired form of the disease in adults. EB is classified into four main groups according to location of skin separation. The four groups include EB simplex (intraepidermal layer), junctional (within the lamina lucida of the basement membrane), dystrophic (below the basement membrane) and a mixed type referred as Kindler syndrome (mixed skin cleavage pattern). EB can be localized or systemic. Cutaneous findings include blisters, scars, pigmentation changes, alopecia, absent or dystrophic nails and deformity of hands and feet. Extracutaneous symptoms of EB might affect eyes, teeth, oral mucosa, genitourinary, gastrointestinal, respiratory and musculoskeletal. The diagnosis of EB can be made from a skin biopsy, genetic mutational analysis or detecting autoantibodies bound to the basement membrane zone and in the serum against collagen VII. Gastrointestinal complications of EB include blistering and stenosis of the esophagus causing dysphagia and weight loss, gastroesophageal reflux disease, hiatal hernia, gastritis, protein losing enteropathy, anal fissure, megacolon, inflammatory bowel disease and constipation. Constipation is one of the most common clinical features of EB occurring in 40-75% of cases. Constipation occurs when defecation is painful due to perianal blisters and fissures leading to fecal retention. Blister formation in the oral mucosa can cause scarring resulting in microstomia and ankyloglossia which restrict food ingestion. Teeth might be structurally defective with poor quality enamel. Anemia is a frequent and serious complication of severe EB. The more severe the EB types, the more extensive the nutritional impairment. Feeding via gastrostomy should be initiated before the onset of malnutrition in order to improve growth recovery, and before the age of ten to allow pubertal development which has a positive psychological impact. Pharynx and esophageal strictures are a common and very morbid complication of EB resulting in dysphagia and odynophagia. Pneumatic dilatation using a high-pressure hydrostatic balloon catheter is the gold standard of treatment of symptomatic esophageal stenosis. Medical therapy of EB can

include neutrophil targeting therapy, immunosuppressors, immunoglobulin, monoclonal antibodies, tumor necrosis factor inhibition, steroids and gene therapy.

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