Klippel-Trénaunay Syndrome and Rhabdomyosarcoma in a 3-Year-Old

Klippel-Trénaunay syndrome (KTS) is a congenital vascular anomaly with soft tissue and skeletal hypertrophy. It has been associated with capillary, venous, lymphatic, and soft tissue malformations, but not with malignancies. Orbital rhabdomyosarcoma typically demonstrates a rapid-onset orbital process that can be confused with trauma or benign tumors. This case report underscores that rhabdomyosarcoma can mimic a benign, lymphatic malformation, particularly in the setting of expected vascular lesions. A comprehensive MEDLINE search failed to identify a previous case of concurrent KTS and orbital rhabdomyosarcoma. Current chemotherapeutic regimens are reviewed.

Report of a Case. A 3-year-old boy had an inferonasal conjunctival mass of 10 days’ duration and a recent upper respiratory tract infection (URTI), including nasal congestion, rhinorrhea, and epiphora. Examination revealed a right, vascular conjunctival mass (Figure 1) and a grade 1 port-wine stain (diffuse capillary and venular malformation) of the left upper extremity (Figure 2A), with soft tissue hypertrophy of the left thenar eminence (Figure 2B). Computed tomography demonstrated an orbital mass with faint areas of internal septation (Figure 3).

The patient was referred to the multidisciplinary Hemangioma and Vascular Malformation Clinic at the
Massachusetts General Hospital (Boston). Physical examination was consistent with KTS. Given the sudden onset of symptoms, recent URTI, radiologic interpretation, and the known association of vascular malformations with KTS, a presumptive diagnosis of orbital lymphangioma was made.

After a 1-week trial of prednisone, the mass had doubled in size. Subtotal resection of a gelatinous, poorly delineated mass was performed. Histopathologic examination demonstrated small, round, blue cells with scant cytoplasm most suggestive of rhabdomyosarcoma or metastatic neuroblastoma in this age group. Positive immunoperoxidase stains for muscle actin, vimentin, and desmin suggested either smooth or striated muscle. Stains for myogenin and myo-D1 were also positive, indicating striated muscle. Neuromuscular staining was negative for tumors of neuronal origin.\(^2\) Despite negative myoglobin staining, a histopathologic diagnosis of embryonal rhabdomyosarcoma was made (Figure 4).

Radiographic staging evaluation revealed no evidence of metastatic disease. The child was treated with a 48-week course of chemotherapy consisting of vincristine and actinomycin D. Local control was established with conformal radiation to the involved portion of the orbit. The patient received a total of 4500 rad (45 Gy) at 180 rad (18 Gy)/fraction per day during 32 elapsed days. Nine months after commencing therapy, there was neither clinical nor radiographic evidence of residual disease. The child was thriving.

Comment. Rhabdomyosarcoma accounts for approximately 4% of all pediatric malignancies.\(^3\) Ten percent originate in the orbit,\(^4\) representing 4% of all biopsied pediatric orbital masses.\(^5\) An extensive description of clinical presentations in ophthalmic cases was recently published by Shields and associates.\(^6\) Both orbital rhabdomyosarcoma and orbital lymphatic malformations commonly exhibit proptosis. Furthermore, Fetkenhour and associates\(^7\) recently reported a case of orbital rhabdomyosarcoma with radiographic features, including internal cavitation, which strongly suggested a lymphatic malformation. In the patient we described, the presence of KTS provided a unique clinical context for similar diagnostic confusion.
Since its inception as a North American cooperative group in 1972, the Intergroup Rhabdomyosarcoma Study Group has undertaken a series of clinical trials that have employed chemotherapy, surgery, and irradiation for local control. The addition of systemic chemotherapy has markedly improved long-term survival in affected children. These children now have an excellent prognosis with current multimodality therapy. A recent review by Oberlin and associates demonstrates the 10-year overall survival rate to be 87% regardless of initial approach to therapy (chemotherapy alone or chemotherapy with local irradiation). In response to the superior survival rates for patients with isolated orbital rhabdomyosarcoma, achieved during the first 2 generations of North American cooperative studies, subsequent efforts have focused on reducing the short- and long-term morbidity associated with therapy while maintaining a very high cure rate.8

Klippel-Trénaunay syndrome is a congenital vascular malformation characterized by 3 features: (1) a cutaneous vascular nevus (capillary malformation), (2) soft tissue or bony hypertrophy in the involved region, and (3) varicose veins or venous malformations. It is frequently associated with deep venous anomalies and lymphatic malformations.9 Common complications associated with KTS include pain in the affected extremity, thrombophlebitis, and cellulitis. Surgical therapy is ineffective, but pulsed-dye laser, hydrotherapy, and compression treatments can be helpful.10 The cause of KTS is unknown.

Numerous vascular lesions have been associated with KTS, but malignancies are extremely rare. Lymphatic and venous malformations can be found either ipsilateral or contralateral to the affected site.9 Orbital lymphatic malformation would not be unexpected in such a setting. In this case, the presence of a URTI at the time of the initial examination gave further support for this diagnosis. Head and neck lymphatic malformations, including orbital lesions, typically enlarge rapidly during respiratory tract infections, presumably owing to infectious stimulation of the aberrant lymphatic tissue.11 Results of radiographic studies were equally misleading: the lesion molded to the globe, there was no bony erosion, and there were areas of heterogeneity (but no frank cystic or hemorrhagic areas).

Corticosteroids are effective in reducing the size of inflamed lymphatic malformations in cases of spontaneous (nonhemorrhagic) enlargement or postoperative swelling and were, therefore, chosen as the initial therapy in this case.12 Medical treatment with early clinical reevaluation was chosen to avoid potentially unnecessary surgery.

Four recognized experts in their respective fields (orbital surgery, vascular dermatopathology, pediatric otolaryngology, and head and neck radiology) were misled by these signs and symptoms. In the setting of an expected benign vascular tumor, one must exclude all potential serious and malignant diagnoses. As demonstrated by our case, rhabdomyosarcoma of the orbit can exhibit clinical and radiographic features that may be misconstrued as a benign, lymphatic malformation.

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Secondary Chronic Open-Angle Glaucoma After Intravitreal Triamcinolone Acetonide

Intravitreal injections of triamcinolone acetonide have increasingly been used for treatment of various intraocular neovascular, proliferative, or edematous diseases, such as diffuse diabetic macular edema, proliferative diabetic retinopathy, proliferative vitreoretinopathy, chronic uveitis, and persistent pseudophakic cystoid macular edema.1,2 In view of the widening spectrum of therapeutic indications of intravitreal triamcinolone acetonide, we report the clinical course of a patient who repeatedly received intravitreal injections of triamcinolone acetonide 14 months apart, who showed intravitreal triamcinolone acetonide crystals still present 9 months after the second injection, and who developed secondary open-angle glaucoma uncontrollable by topical antiglaucomatous medication.

Report of a Case. A 79-year-old woman sought treatment for progressive exudative age-related macular degeneration with subfoveal occult neovascularization in her left eye. Snellen chart visual acuity decreased from 0.80 to 0.50 OS with the accompanying complaint of marked metamorphopsia. Intraocular pressure measured 16 mm Hg, and the appearance of the optic nerve head was normal. The right eye demonstrated a large subfoveal disciform scar due to exudative macular degeneration covering the whole macular region be-