

SMRT Student Scope Submission

Title and Author(s)

- ☐ Include Title of your submission and any collaborator as co-authors
Osteogenic Sarcoma

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Introduction or Patient History

On March 23, 2006 a 21-yr. old female came to the clinic for proximal lateral lower leg pain in her left knee for approximately 8 to 9 months. She denied any trauma or injury to the leg and was not involved in sports. The leg was swollen, but she had claimed to be feeling overall very well. There was also a visible mass seen just proximal to the joint line and lateral to the tibia. Upon palpation, there was tenderness, having the feeling of a fixed and firm mass, but not hard as bone. She also denied having any tingling or decreased function in that leg. In going over her medical history, she had no family history of cancer or any medical problems in the past. She was then sent for plain radiographs of both knees. The impression was a large expansile lytic lesion at proximal left fibula most likely represents aneurysmal bone cyst vs. telangiectatic osteosarcoma. CT or MRI evaluation for fluid/fluid levels and other characteristics would be beneficial. She was then sent for an MRI of the left lower extremity. The Impression was a large proximal left fibular mass with malignant appearance invading the tibia and could represent osteosarcoma or Ewing's sarcoma. Atypical appearance of aneurysmal bone cyst or giant cell tumor may be considered. On May 4, 2006 she had another MRI follow up on the left lower extremity. The impression was little change in the size of the proximal fibular osteogenic sarcoma, but there had been an interval increase in the degree of enhancement. The mass continues to invade the medial aspect of the tibia and abuts the neurovascular bundle, as above. Interval increase in the amount of intramuscular and subcutaneous edema in the calf. On June 5, 2006 she had another follow up exam on the left lower extremity and that is the exam that is looked at in this case.



Patient Preparation and Scan Set up

The young woman came to the department in a wheel chair with her family and was given the Pre-MRI consent sheet. Asking her medical history and previous MRI history, she was then ready to get started. She was wheeled to a 1.5 Tesla Siemens Avanto scanner and asked once again her date of birth, and if there was anything in her pockets that needed to be removed before entering the room. Being cleared she was then wheeled somewhat inside the room, and then helped to the table. Placing her feet first and supine she was positioned with her legs flat, but having her right leg slightly higher than the left. The body coil was then placed over her lower extremity, making sure to include the knee joint on the left leg. Once her legs were comfortable and in the correct position, she was given earplugs and placed in the magnet. Centering just slightly proximal to her knee joint. Since she had previous MRI exams, we were able to see on the computer where the mass was located before she was even brought back to the magnet. She was also informed that she would be receiving 15cc of gadolinium about half way through the exam. Once she was confirmed to be doing okay, the exam was started.



MR Imaging Parameters



Phase Sequence	TR	TE	Images	Slice Thickness
Axial/Coronal Loc	15	5	16	10 skip 5
Sagittal Loc	15	5	16	10 skip 5
Coronal TSE T1	402	8.2	26	5 skip 1
Coronal T1 STIR	5940	33	26	5 skip 1
Axial T2 FS TSE	5920	65	30	7 skip 1.4
Axial TSE T1	472	8.3	30	7 skip 1.4
Coronal T1 FS	639	8.2	26	5 skip 1
<u>Administration of 15cc of gadolinium.</u>				
Axial T1 FS POST	597	8.3	35	7 skip 1.4
Sagittal T1 FS POST	590	8.2	24	5 skip 1

Findings and Discussions



The findings from the exam on June 5, 2006 were as such when compared to the exam on May 4, 2006. Again seen is a 7.8 x 4.1 x 6.4 cm intermediate T1, heterogenous increased T2 signal soft tissue mass arising from the proximal fibula, consistent with the patient's known osteogenic sarcoma. There is a similar degree of post gadolinium enhancement noted when compared with the prior examination. The mass is again noted to abut the medial aspect of the proximal tibia, with stable appearing cortical thinning. The neurovascular bundle is again noted as stretched over the tumor surface. There is slightly decreased subcutaneous edema in the mid and distal calf with similar-appearing intermuscular edema. The overall impression was no significant change is noted in the size or gross appearance of the proximal fibular osteogenic sarcoma since prior examination of 5/4/2006. Upon looking up the findings, there was no registration for surgery at this time.

Conclusions



I chose this case based on wanting to have more understanding of osteogenic sarcoma. This young woman was also so sweet and positive about her condition, and was very inspiring to us during her scan. Being young and in college, and having to deal with a situation like hers is not exactly an ideal time in life. She is very optimistic. However I found that osteogenic sarcoma is one of the most common types of bone cancer in children and accounts for nearly 3 percent of all childhood cancers. About 400 children are diagnosed with osteosarcoma each year. The disease usually first occurs in the long bones and then can spread to the lungs, kidneys, and brain. Most often cases are seen between the ages of 10 and 25 years of age. This type of cancer is often more prevalent in males than females, possibly due to the rapid growth at this age. Most often osteosarcoma is due to repeated trauma to an area, genetics, and some forms have been linked to ionizing irradiation associated with radiation therapy for other types of cancer. There are some symptoms, as such in this case, the swelling, pain, limping, and decrease movement of the affected limb. Most often diagnosed from x-rays, MRI, CT, bone scans or blood tests. There are treatment depending on the age and severity of the patient. Some options are radiation therapy, surgery, antibiotics (to prevent and treat infections), and amputation.

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Images

