Pediatric Orthopaedics of New York

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Morgan Stanley Children's Hospital of NewYork-Presbyterian/Columbia University Medical Center

Delicate Diagnosis for Bone Disease and Tumors

By **Francis Y. Lee, MD** *Associate Professor, Chief of Tumor and Bone Disease Service*

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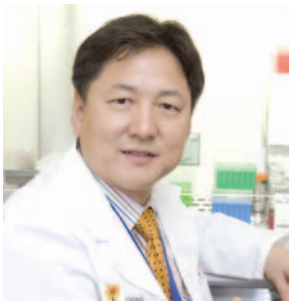

The symptoms may be as simple as swelling, pain in the bones that is worse at night, or fractures that occur too easily. While bone disease and tumors are rare in children – they do exist. When these diagnoses are suspected, the next step should be to seek the care of a specialist because of the delicacy of the situation. Even a biopsy can cause harm if performed incorrectly.

Diagnosing bone tumors requires a series of tests including blood, urine and imaging studies in addition to a complete medical and family history. While these will help determine the size and location of a tumor, the biopsy will determine whether the tumor is benign or malignant. Because of the delicacy of the child's bone, the biopsy exposes additional risks that could include damage to surrounding tissue or possible fracture of the bone.

While the cause of many bone tumors is unknown, the most common findings are benign bone tumors or bone diseases including fibrous dysplasia, osteogenesis imperfecta and juvenile osteoporosis. Most of the bone tumors in children are benign.

The most common types of bone cancer among children and adolescents are: Osteosarcoma, which develops in new tissue in growing bones. Common locations include the knees, as well as the upper legs, and upper arms. Ewing's sarcoma, is thought to begin in immature nerve tissue in bone marrow. Common locations include the pelvis, upper legs, ribs, and arms.

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Columbia CME on Musculoskeletal Issues in Children: *New Jersey, March 4th*

Join faculty from the Pediatric Orthopaedic Surgery Division as they discuss the latest advances in evaluation and treatment. To be held at the ***Saddle Brook Marriott,*** *Saddle Brook, NJ.*
This **CME** is generously supported by ***EBI, Inc.*** a leader in surgical instruments.

TO REGISTER:
Contact: **Center for Continuing Education, Columbia University College of P&S**
Phone: **212.305.3334**
Website: **ColumbiaCME.org**
E-Mail: **cme@columbia.edu**

Morgan Stanley Children's Hospital of NewYork-Presbyterian
Columbia University Medical Center

Cancer at 13 – Nicole's lucky number.

Diagnosed with osteosarcoma at age 13, Nicole is in complete remission two years later.

Like most teenage girls, Nicole worried about her hair. But unlike other girls, Nicole was worried about losing her hair due to pending chemotherapy. Nicole was diagnosed with osteosarcoma at the age of 13. Originally diagnosed as a cyst, Nicole was not able to use her right arm due to pain and progressive bone destruction. Her parents sought specialty care by Francis Y. Lee, MD at the Children's Hospital of New York. "I could tell by the way he was looking at the MRI that something was wrong," described Nicole. After an immediate biopsy, Dr. Lee's concerns were confirmed.

Osteosarcoma is the most common type of bone cancer in children. In the United States, the incidence is 400 cases per year (4.8 per million in the population under 20 years of age). Because osteosarcoma usually originates from bone-forming malignant cells, it is most frequently found during an adolescent growth spurt and typically originates in the fastest growing long bones around the knee.

Special skills are required to diagnose osteosarcoma accurately as the most common symptom, pain with activity, is ubiquitous. A palpable mass may or may not be present, and osteosarcoma can appear similar to other types of cancer. It is preferable for the biopsy to be performed by the surgeon who will be conducting the surgery. If a biopsy is performed improperly, more damage could occur and even result in amputation of an otherwise salvageable extremity.

> "Special skills are required to diagnose osteosarcoma accurately..."

Nicole followed a pre-operative and post-operative chemotherapy regimen to prevent the tumor from metastasizing and subsequently underwent several surgeries. Appreciative of the respect she received from every member of her team, Nicole said, "I didn't want anyone to lie to me, or feel sorry for me." Two years later, and in remission, Nicole says her lucky number is 13 because this experience has taught her so much.

Young Dancer Raises Funds for Scoliosis Research

Just three months after surgery for scoliosis, Jeff Lapes was performing a breakdancing routine with his dance company. At 17, the curve in Jeff's spine had progressed to 65 degrees, affecting the height of his trunk and causing pain.

> "...over $7,400 for pediatric orthopaedic research..."

Jeff and his family were so thrilled with his outcome, and thankful for the care they received, they decided to host a fundraising party for Pediatric Orthopaedic Research at Columbia University Medical Center that raised over $7,400.

Dr. David Roye, Jr. (on left) with Jeff Lapes and his parents.

About thirty people gathered at the Lapes' home in Upper Saddle River to show their support, many of whom, had children who had also received orthopaedic surgery. The highlight of the evening was a performance by Jeff and three of his fellow dancers from the "In The Spotlight" dance company of Hackensack, NJ.

"We are very grateful for the generosity shown here tonight," remarked David P. Roye, Jr. MD, Chief of Pediatric Orthopaedic Surgery. "The research we do allows us to find new treatments and new techniques specifically for the pediatric population."

Meet Francis Y. Lee, MD

Francis Y. Lee, MD, combines specialty training as a surgeon, oncologist and research scientist.

Francis Y. Lee, MD is one of the few physicians in the country with his combination of specialty training as a pediatric orthopedic surgeon – musculoskeletal oncology and a fellow in orthopedic research. Dr. Lee is Associate Professor, Chief of Tumor and Bone Disease Service and Director of the Center for Orthopaedic Research. Dr. Lee has always been drawn to the biological aspect of orthopedic disease and pursuing avenues to enhance pediatric bone health. In his clinical practice, Dr. Lee specializes in bone disease and tumors, as well as the treatment of scoliosis and limb lengthening. His time dedicated to research currently consists of studies focused at the molecular level. (see below) Dr. Lee describes his research as "translational" which allows for results from the bench to be applied to his clinical practice. Born in Lexington, KY where his father was an orthopedic surgeon, Dr. Lee began his dual career path with his education at Seoul National University in both Medicine and Orthopedic Science. He completed his residency at New Jersey Medical School; a Research Fellowship at Mount Sinai School of Medicine; Orthopaedic Oncology Fellowship at Harvard Medical School and Pediatric Orthopaedics Fellowship at University of Toronto. In the late 1980's Dr. Lee learned modern scoliosis surgery using transpedicular screws from Dr. Se-Il Suk, a pioneer in this procedure. A prolific writer, Dr. Lee has published scores of articles in medical journals in the past three years, and has presented 20 this past year alone. He brings his passion to his dual career describing his research as his way of finding a cure, and his declaration that "every patient is so precious."

Current Research on Tumor and Bone Disease

Under the direction of Dr. Francis Y. Lee and Louis U. Bigliani, MD, Professor and Chairman of Orthopaedic Surgery at Columbia University, the Center for Orthopaedic Research has been reorganized to conduct state-of-the-art bioengineering research for musculoskeletal disorders. Dr. Lee and his associates are looking at the molecular mechanism of inflammatory bone loss and tumor-induced osteolysis, with a focus on the pathophysiology of bone loss. One of the approaches is an application of anti-osteoporosis/bone resorption agents to osteolytic tumors. Another approach is customized therapy based on the biological mechanism for hyperactivation of osteolysis.

Current Grant Supported Research

AGENCY	TITLE
Aircast Foundation Research Grant	• Targeting cell survival genes of chondrosarcoma
Musculskeletal Transplant Foundation	• Topical Bisphosphonate on Trabecular Bone Allograft Resorption and Incorporation
Orthopaedic Research and Education Foundation	• SDF-1 Regulation in Osteoclastogenesis
Tissue Gene	• Gene Expression Profiling of Cartilage Tumors
Woman-at-Risk, Columbia University	• Screening of Novel factors for metastatic breast cancers to bone

For a link to the "Center for Orthopedic Research" visit "Research" at www.childrensorthopaedics.com, and also see current studies open for enrollment and abstracts of published articles.

Delicate Diagnosis for Bone Disease and Tumors (CONTINUED FROM P. 1)

Secondary bone cancer (tumors metastasized from other cancers) is more prevalent than the primary type. Primary malignant bone tumors are rare (less than 1% of all malignant tumors) and are most common in young men. The National Cancer Institute reports that approximately 2,500 new cases are diagnosed each year in the United States.

Surgery is often the main treatment for bone cancer. Chemotherapy and radiation may also be used alone or in combination. At the Children's Hospital of NewYork-Presbyterian, our entire 5th floor is dedicated to providing care for children with cancer. Dr. Francis Y. Lee joins teams of medical professionals including pathologists, radiologists, pediatricians, oncologists, surgeons, social workers and play therapists to provide specialty care.

March 4th CME on "Musculoskeletal Issues in Children" in New Jersey *see inside for details.*

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We've added Sports Medicine to the Team.

We welcome Christopher S. Ahmad, MD, specialist in Adolescent Sports Medicine. Dr. Ahmad focuses on shoulder, elbow and knee injuries, with particular concern for throwing athletes. He has published numerous papers, presents at national conferences, and teaches surgical techniques internationally. Pursuing his love for athletics, Dr. Ahmad has served as team physician for professional teams and is currently team physician for both college and high school teams.

Serving the Tri-State area, call : 212-305-4565 for an appointment in any of our locations.

New York ➤	***Manhattan***	• Morgan Stanley Children's Hospital of NY-Presbyterian, 3959 Broadway at 165th Street
		• Herbert Irving Center, 161 Fort Washington Avenue at 165th Street
		• Columbia Eastside, 16 East 60th Street *(New expanded hours)*
	Brooklyn	• Sclafani-Vitale Orthopaedics, 9711 Third Avenue
	Middletown	• Horton Medical Pavilion, 75 Crystal Run Road
	White Plains	• Medical Office Park, 244 Westchester Avenue
New Jersey ➤	***Edgewater***	• Palisades Medical Arts Building, 968 River Road
	Teaneck	• Medical Office Building, 699 Teaneck Road
Connecticut ➤	***Greenwich***	• Greenwich Hospital, 5 Perryridge Road

Visit our website www.childrensorthopaedics.com

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