Yehuda Furman was not the kind of six-year-old boy who complained much. So it was something of a surprise when during the April 2005 Passover holiday, Yehuda started to complain about a pain in his leg. That night he was crying in his sleep from the pain and by the next morning, it had become so bad that he could not walk.

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Yehuda's parents, Mark and Miriam, immediately took him to his pediatrician. After an examination and a series of blood tests, the doctor asked the Furmans to try and remember if Yehuda had been involved in any recent accidents.

"The one thing we could think of," Miriam remembers, "is a fall he had taken off the monkey bars in the neighborhood playground a number of days earlier." Based on this and a spike in Yehuda's temperature, the pediatrician's initial diagnosis was transient synovitis of the hip, a condition in which the hip joint's inner lining, known as the synovium, becomes inflamed.

Trying to Find a Diagnosis

The doctor made an emergency appointment with an orthopedist. After ordering x-rays, the orthopedist reviewed the results of the initial blood tests, which included abnormally high white blood cell counts, suggesting an infection. Because the x-rays did show a fluid buildup in the affected hip joint, the orthopedist became concerned that Yehuda might be suffering from a bacterial infection, which could affect his heart. Yehuda was immediately admitted to the local hospital.

Further testing in the hospital's emergency department seemed to discount the possibility of a bacterial infection, with the emergency room doctors still suspecting transient synovitis. However, while not positive of the diagnosis and with Yehuda in increasing pain and running a fever, the doctors admitted Yehuda for observation and testing. Meanwhile, the pain had moved from Yehuda's upper leg down to his calf and foot. The pain was so bad that he couldn't walk and would barely let anyone touch his leg for an examination.

"Not being satisfied with their explanations, I asked the doctor if it could be something more serious," Mark says. "But he looked at me like I was nuts, saying with firmness 'This is a bone infection. We just don't know exactly where the infection is located.'"

By the morning of the following day, Wednesday, as the discharge papers were being prepared, Yehuda's temperature spiked again. The pain was now so bad that he had to be placed on a morphine drip. On Thursday, doctors performed an MRI and an ultrasound of his hip joint and lower extremities. When both those screening exams proved inconclusive, the radiologist performed a CT scan.

"It's Bad. It's Real Bad."

After another long hour's wait, the orthopedist called with the news. Mark and Miriam will never forget his first words: "It's bad. It's real bad." He went on to explain that the CT scans revealed a tumor that had penetrated Yehuda's spinal cord. It was located in the upper sacrum, which is the large triangular bone located between the two hip bones at the base of the spine.

The doctors suspected cancer and the oncologist on call at the hospital that day ordered a biopsy of the tumor for the following morning. At the same time, Mark's brother-in-law took a copy of the films to be reviewed by a neuroradiologist at NYU Medical Center.

"If It's Cancer, We Want to be at Sloan Kettering"

Yehuda during treatment

The surgeon who was supposed to perform the biopsy informed the Furmans that they did not have the expertise to perform surgery on a tumor in such a "tricky" location. The surgeon canceled the biopsy, explaining that when possible, the doctor who performs the surgery should be the one performing the biopsy. When they asked who did have the expertise, they were given the names of two doctors — one at Mt. Sinai Medical Center and Patrick J. Boland, an orthopedic surgeon at Memorial Sloan Kettering. "Our thinking was, If it's cancer, we want to be at Sloan Kettering," Miriam explains.

"Literally a minute later," Mark adds, "my brother-in-law called from NYU and said that their initial diagnosis from looking at the scans was Ewing sarcoma." (A rare cancer that involves the bone as well as the soft tissue, Ewing sarcoma was first described in 1921 by Memorial Sloan Kettering oncologist James Ewing.) The advice he passed along to Mark and Miriam was that they should see Leonard Wexler, a pediatric oncologist at Memorial Sloan Kettering who specializes in the treatment of children with bone and soft tissue sarcomas. "At that time, we didn't even realize that Dr. Boland was a surgeon and Dr. Wexler was a medical oncologist," Mark says, laughing at the memory.

Two hours later, after a series of phone calls, Yehuda was in an ambulance being transferred to Memorial Sloan Kettering. "Our world was being turned upside down," Miriam remarks. Mark went along with Yehuda, while Miriam went home to attend to the couple's three other children.

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"We had our initial consultation with Dr. Wexler, who was very conservative," Mark recounts. "Until he had the results of all the tests, especially of the biopsy, which still needed to be done, he didn't want to assume it was cancer."

Wednesday Biopsy, Friday Diagnosis Confirmed

Yehuda was admitted to Memorial Sloan Kettering on a Friday afternoon. CT and MRI scans were completed on Saturday, and the biopsy was performed on Wednesday. By Friday, it was confirmed: Yehuda had Ewing sarcoma. The Furmans had their initiation meeting with Dr. Wexler that day, and on Saturday Yehuda started the three-cycle presurgery chemotherapy portion of his treatment, which was given to shrink the tumor so it could be safely removed by surgery. (Some patients, depending on the location, extent, and type of the tumor, also receive radiation therapy as part of the Ewing sarcoma treatment combination.)

Yehuda Furman

The tumor's location near the spine meant that three nerve clusters leading to the leg might be involved. If these nerves had to be removed as part of the surgery, or were damaged during the surgery (or radiation), there would be a very real chance that Yehuda would lose the use of that leg. (The three nerves potentially involved were the S1 nerve, which controls the bottom of the foot and the calf muscle; the S2, which controls the hamstring muscle; and the L5, which controls the quadriceps muscle.)

"You know you're going to have this life and death fight ahead of you," Mark explains. "You look at the survival statistics, and you hope and pray that your child will end up at the good end of the numbers. But you also are forced to deal with the fact that all these dreams you had for your child may not come true. I had dreamt of playing baseball with my son, and now doctors were telling me that even if he beats cancer he may never walk again."

Superb Prognosis Meets Rough Start of Treatment

Still, the Furmans never allowed themselves to be pessimistic about Yehuda's chance of survival. "It helped that Dr. Wexler told us that Yehuda had a 'superb' prognosis, meaning it was a treatable subtype of Ewing sarcoma that was caught much earlier than these type of tumors usually are — seven days versus the typical three to four months," Mark says. "So they caught it early, before it had a chance to spread too far. And though the location was obviously not ideal for having to remove it, being near all those nerves, it did generate a lot of immediate pain, which gave us this early-warning signal."

> You need to go to a place with experts in treating your child's cancer. That's why we went to Memorial Sloan Kettering.
>
> Mark Furman
> Yehuda's Father

The Furmans split the days into shifts, with Miriam spending days with Yehuda at the hospital and Mark spending nights. The night after the first chemotherapy treatment was difficult. “He started vomiting, which alternated with uncontrollable diarrhea,” Mark says, wincing at the memory. “He couldn’t walk, so I was carrying him back and forth from the bathroom. In the middle of all of this, he looked up at me and asked, ’Am I dying?’ I told him no, that it was just his body trying to get rid of the chemo, which he was taking to kill the blob. That’s how we referred to the cancer, as ’the blob.’ That was the worst night. By the next day, the doctors and nurses figured out which combination of antinausea drugs would work for Yehuda.”

After the second cycle of chemotherapy was completed, Yehuda was rescanned to determine if the tumor was shrinking. While the tumor had shrunk considerably as a result of the chemotherapy, Dr. Boland still considered it to be too close to the spinal cord to remove safely with good margins, meaning that no tumor cells would be left behind. Leaving cells behind would require the use of radiation to kill them, which could possibly affect the nearby tissue, thereby negating the benefits of surgery.

Following the completion of the third round of chemotherapy, Dr. Boland was still not comfortable doing the surgery because he felt there was a high probability that Yehuda would require radiation therapy to deal with the cancer cells in the margins. As a result of the complexity resulting from the tumor location, Yehuda’s case was brought before a group of orthopedic specialists — called the Orthopedic Tumor Review Board — who review orthopedic cases at Memorial Sloan Kettering. While the Furmans prepared Yehuda for radiation treatment — a process that involved meeting the radiation team, discussing possible treatment and late effects, and going through the set-up and radiation simulation — Yehuda began the fourth cycle of chemotherapy. The plan was to start radiation after the fourth cycle was finished.

Towards the completion of the fourth cycle, the Orthopedic Tumor Review Board concluded that there was a 75 percent chance that Dr. Boland could remove the entire tumor. This left the Furmans with a choice. “Our personal opinion was that radiation was the last resort,” Mark notes. “We believed that surgery would give Yehuda the best chance of survival.” The Furmans discussed the options with Drs. Wexler and Boland and the decision was made to go ahead with surgery.

Seven-Hour Surgery Becomes 14 Hours

The day of surgery, August 22, 2005, will forever be etched in the Furmans’ minds. They were told that the surgery would most likely last about seven hours. Mark remembers the sight of Yehuda being wheeled into surgery, holding his beloved Nintendo Game Boy video game above his face. Unfortunately for the Furmans, who were waiting anxiously, the expected seven-hour surgery, which began at nine in the morning, turned into a 14-hour marathon procedure. “The nurses were good at giving us updates every two hours, but by five o’clock, the waiting area started to thin out and we began to worry,” Mark says. “By seven o’clock, we were one of the few families left.”

Around ten o’clock, Dr. Boland came out to tell the Furmans that while the surgery had gone well, the tumor being removed with good margins, they were having some difficulty stopping the bleeding. At 11 o’clock, they received word that the bleeding had been stopped. When they spoke with Dr. Boland at 1:00 a.m., he explained that the chemo had shrunk the tumor much more than he had initially expected. He said he had worked hard to preserve the S2 and L5 nerves, but to remove the entire tumor he had had to cut the S1 nerve. Still, he felt very positive about Yehuda’s chances to maintain function.

Full Lower-Body Cast, Post-Surgery Chemo, and Finally, Success

After recovering from the marathon surgery, Yehuda was placed in a full lower-body cast to straighten his leg and to protect the structure at the base of the spine supporting the lower limbs. His legs were separated in the cast by a sawed-off broomstick. “He couldn’t sit up,” Mark remembers. “He couldn’t roll over. He couldn’t do anything. It was rough.” Miriam agrees, “It was nuts, but we would use the broomstick as a handle. You’d put one arm beneath his back and one hand on the broomstick and that’s how we would carry him. We’d have to go through doors sideways!”

Yehuda received three cycles of postsurgery chemotherapy, which was meant to kill any remaining cancer cells. The final cycle was completed in November 2005, approximately six months after he was diagnosed. He was walking again by February. More than three years later, not only can Yehuda walk, he runs, jumps, and climbs just like any other healthy nine-year-old boy.

> “Yehuda has made an extraordinary and near-total neurologic recovery. I was privileged to see him running around camp with his mischievous smile, being just a 'regular' kid, less than two years after his surgery.”

Leonard H. Wexler
Pediatric Oncologist

When asked if they have any advice for other families going through a similar cancer experience, the Furmans are realistic. “The good news is, when you’re going through this hugely traumatic experience, it’s all sort of a blur,” Mark recounts. “You’re so caught up in the survival aspect of everything that you just do whatever needs to be done. We never really sat down and discussed how crazy everything we went through was until much later, when it was all over with. Which is how you survive it. Getting as much information as you possibly can also helps. As a parent, you have to be your child’s best advocate.”

“And you need to go to a place with experts in treating your child’s cancer,” Mark adds. “That’s why we went to Memorial Sloan Kettering. Dr. Boland and Dr. Wexler saved our son’s life. We will be forever indebted to them both.”