

Advances in the Treatment of Osteosarcoma

Webcast

May 6, 2008

Christopher Cannon, M.D.

Please remember the opinions expressed on Patient Power are not necessarily the views of M. D. Anderson Cancer Center, its medical staff or Patient Power. Our discussions are not a substitute for seeking medical advice or care from your own doctor. That's how you'll get care that's most appropriate for you.

Michelle's Story

Andrew Schorr:

Hello and welcome once again to Patient Power. I'm Andrew Schorr. And each session of Patient Power, every two weeks on the M. D. Anderson website, we talk about critically important cancer topics. It's time to talk about osteosarcoma. We're going to learn a lot more about it, but osteosarcoma is a bone tumor that consists of malignant cells that produce immature bone, the most common type of bone cancer in children and adolescents, affects more males than females, a lot more statistics about it. It's not a common cancer, but if you are diagnosed with it it is so important to see people who specialize in it. M. D. Anderson has a sarcoma center. We previously talked about soft tissue sarcomas. Today we're going to talk about these osteosarcomas, bone cancers.

I want you to meet someone who has lived through all this, and that is Michelle. She's 29 years old now. She has a little boy, two years old, Florian. She joins us from Louisville, Kentucky, if I get that right.

How did I do on my pronunciations, Michelle?

Michelle:

You did pretty well. You did pretty well.

Andrew Schorr:

All right. So let's go back a couple of years. September 11, 2006, I guess it was, you were living in Albuquerque, New Mexico, and you had had the baby and you're getting past the pregnancy, but throughout the pregnancy and continuing you had back pain, and it was getting worse, not better. You end up going to a chiropractor to see what was going on, and when you talked about numbness and other pain he said you better get x-rays. That was an important recommendation, wasn't it?

Michelle:

Yes, definitely. I consider it lifesaving.

Andrew Schorr:

So you get the x-rays, you go to the doctor. The doctor says, No, I'd rather do an MRI. And the MRI showed something unusual. And unfortunately often when it

shows something unusual maybe it isn't a big deal, but in this case it turned out to be a sarcoma. When you were told that, this word "sarcoma," had you ever heard it before?

Michelle:

No, I had never heard the word before.

Andrew Schorr:

So what did you do? The oncologist says, Well, I know the word sarcoma, but I haven't seen it much. What was the recommendation on what to do then to try to get treatment for it?

Michelle:

Well, when he met with the oncologist in New Mexico he was very forthcoming with us right off the bat and said, you know, very frankly, I will treat you if you choose to stay here. However, it's not my recommendation that you get treatment here because we just don't see this cancer often enough. So he recommended that I go somewhere that would be the best because it is such an aggressive cancer. So we needed to see people that knew what they were doing with it.

Andrew Schorr:

And you found that at M. D. Anderson?

Michelle:

Exactly.

Andrew Schorr:

Well, you got to know M. D. Anderson very well because my understanding is you arranged to have a consultation there, and they said, well, maybe you'll be here for a month. With all the treatment you had, and we'll help people understand the happy result, but how long were you in Houston?

Michelle:

We ended up staying nine months.

Andrew Schorr:

Wow. And that was your husband, Erik, who took a leave of absence from his job. And then you had in-laws and your mom there and of course Florian. You had a family support structure. Well, your treatment was combination chemotherapy for many months, maybe five months?

Michelle:

Yep, five months.

Andrew Schorr:

And then major surgery because the bone cancer was in your pelvis. So you had major surgery. How long was that surgery to try and cut the cancer out after those courses of chemotherapy?

Michelle:

Dr. Cannon can correct me if I'm wrong, but I recall the resection I think was 13 hours, and then the reconstruction was 17 hours of surgery.

Andrew Schorr:

Well, you're right. We have your doctor with us, and he can chime in. We're going to spend a lot more time with him, and that's Dr. Christopher Cannon, who is assistant professor of surgery in the department of orthopaedic oncology at M. D. Anderson and the surgeon with his whole team and made a big difference for you.

Dr. Cannon, so just to pick up the story on Michelle there, she went through that combination chemotherapy for a number of months but then had this surgery to cut the cancer out first. How long a surgery was that, do you recall?

Dr. Cannon:

I think Michelle is about right. I think the first day was slightly shorter, but it was on the order of 12 or 13 hours, a fairly long day for all concerned. We had planned this ahead of time knowing it was going to be a long day, so to give everybody a chance to recover, I think the first surgery was on a Wednesday, and then Thursday was just a recovery day for all concerned, and then we did the reconstruction, put everything back together on the following day on Friday.

Andrew Schorr:

And so reconstruction of her pelvis. Now, there's you as an orthopaedic surgeon. What other M. D. Anderson surgeons, what types of surgeons did you need to do this?

Dr. Cannon:

Michelle's osteosarcoma was in a little bit of an unusual place in that it was in the pelvis, which is unusual in and of itself, but also it was kind of at the base of her spine. So we had one of our neurosurgeons who specializes in spine surgery, Dr. Larry Rhines, assist both in the resection of the tumor as well as the reconstruction. So we both had to again work on the spine and the pelvis.

And also as part of the reconstruction, we had a big gap between where the portion of the pelvis had been taken out, and one of our plastic surgeons participated in that and basically harvested Michelle's fibula, which is the smaller bone in your lower leg, which they can take with its blood supply and then plug it into the blood supply in the pelvis and basically grow between the two--to fill in the missing segment of bone basically in the pelvis.

Andrew Schorr:

Wow. Wow. So these were two major surgeries and bringing sort of cross functional teams together.

Dr. Cannon:

Correct.

Andrew Schorr:

And this is in addition to Michelle already going through part one of her medical oncology story, having combination drugs fighting the cancer.

And then, Michelle, afterwards you had sort of a mop-up chemotherapy for a little bit, first in Houston and then back where you had chosen to move now with your in-laws, back to Louisville, right?

Michelle:

Right. Yeah, I continued chemo after surgery for a year.

Andrew Schorr:

Wow. So you're off chemo. How are you doing? Are there signs of the cancer?

Michelle:

No, I'm cancer-free. I've been cancer-free--as far as I'm concerned I've been cancer-free since the surgery. But, yeah, all my scans are clean and just loving life, you know. I'm back to normal.

Andrew Schorr:

Loving Erik and Florian.

Michelle:

Yeah. Yeah. That's my number one job now. I'm a stay-at-home mom and living every day with my little boy.

What is Osteosarcoma?

Andrew Schorr:

Well, we'll come back to you. Let's go on and have a little more conversation with Dr. Cannon and put this in perspective.

So, sir, help us understand osteosarcoma. I know there are many different types. And also this is not common among all cancers, and I know we're going to underscore the point of how vital it is for anyone diagnosed with this wherever they may be to really try to get a connection with specialists like you have a whole group at M. D. Anderson because it's so rare and most other doctors don't really see this maybe at all.

Dr. Cannon:

Well, that's exactly it. Though osteosarcoma is the most common bone sarcoma, it's still quite uncommon. There's only 900 to a thousand cases a year in the entire United States, as opposed to the hundreds of thousands of cancers of the various types, you know, lung cancer, kidney cancer, breast cancer. So it's quite uncommon. And then within the overall heading of osteosarcoma there are a number of different sub types, and some are treated the same and some are treated differently, which just means that no one person, unless you're in a place that has a very large referral basis, do you see a lot of it. So I do think it's a benefit for most people if they are able to do it to travel to a center where it's seen more routinely.

Treatment: Chemotherapy and Surgery

Andrew Schorr:

Now, in the case of Michelle, as an example, is this common that there may be chemotherapy first then surgery, maybe some reconstruction as well, and then chemotherapy again. How do these modalities work together typically now?

Dr. Cannon:

Well, in the current era of treatment of osteosarcoma is chemotherapy followed by surgery followed by further chemotherapy. And part of the reason it was started is that it used to be for the reconstruction in order to put everything back together they had to have custom-made prostheses, custom-made implants to put back into place or to order cadaver bones for that purpose. And so while they were waiting they'd start chemotherapy, and they found that often they could get a good response and made the surgery somewhat easier, and so it continued to be the case that often it makes it an easier and safer surgery for us, the surgeons.

And, secondly, doing the chemotherapy first, when we take the tumor out and the pathologist looks at it they can give some feedback to the oncologist, the person administering the chemotherapy, if the chemotherapy is working well. Because if essentially all of the tumor is dead they know it's working well, and they continue on with the same chemotherapy. Though if it is not as dead as they would like they can alter things somewhat at that point. So it kind of gives them almost a mid-treatment look at how the tumor is doing.

Andrew Schorr:

How are we doing with what you might call limb-sparing surgery? Because cutting out the tumor, cutting out the bone, you want to get rid of the cancer but you want to preserve as much of the person's skeletal structure as you can. Where are we with that?

Dr. Cannon:

Doing quite well. We don't really do very many amputations any more for osteosarcomas or really any of the sarcomas. There are unfortunately certain cases

where it's just too advanced or spread into such structures as we cannot do a reasonable limb-sparing surgery and do have to do an amputation, but for the vast majority we can safely do a limb-sparing surgery. And it's been shown in any number of studies that the survival rate is no worse for that, so there's not really a penalty for preserving the limb. And in general we have good means of reconstructing this. You know, if we take a portion of bone out we have to put something back in, and that can be done in different ways depending on what part of the body we're talking about. But in general we have good reconstruction.

Now, what Michelle went through is much bigger and more difficult than most people have to, and she's been a real trouper through all this and has done remarkably well. But what she had to go through is worse than most people. The most common sites for osteosarcoma are either the end of the femur or the top of the tibia, so basically around the knee joint. It's a much, though significant, a much easier recovery than again what Michelle has gone through.

Treatment Success

Andrew Schorr:

Now, I know there are many different types, so it's going to vary, but where are we now with success in treating this and letting people have their life back?

Dr. Cannon:

Again, quite good, but like anything you'd like it to be better. For the standard osteosarcoma, which is called a conventional high grade sarcoma, the five-year survival is around the 70 percent range. You know, we'd like it around the hundred percent range, but it made a big increase a number of years ago when they started using the current chemotherapy or modern type chemotherapy. And then we've continued to slowly improve since that time, though it really was kind of a breakthrough back in the early 80s when they went to the, again, current style of chemotherapy. Before that it really had a terrible, terrible prognosis. That's part of the reason if you hear anybody talk about bone cancer most people are thinking about osteosarcoma and that it really had a pretty grave prognosis in days gone by.

Andrew Schorr:

Well, it's good to know that that's in the past. So Michelle has a lot of hope for the future, and it seems like that's well placed now.

Dr. Cannon:

Correct.

Andrew Schorr:

Michelle, we're going to take a brief break in a second but as your doctor said you were quite a trouper. And so I know you went through some very heavy-duty therapy, heavy-duty surgery, but it seems like it's given you your life back.

Michelle:

Yeah. I think that the key for everybody to remember is, you know, I do have my life back, it's just a different life too. It's just different than what I had before. You know I was not expecting to be here in Kentucky. I wasn't expecting to be walking with a cane at 29, you know, but I mean I'm here. So that's the most important thing. I have a lot of reasons to be here and a lot to live for so.

Andrew Schorr:

Yes, you do. We're going to take a short break and when we come back we've gotten some e-mail questions from our listeners from around the country, around the world, and we'll pose those to Dr. Christopher Cannon, who is assistant professor of surgery, department of orthopaedic oncology, a specialist in surgical treatment for osteosarcoma. And we'll also be back with Michelle, age 29, now recovering from a lot of treatment and moving on with a new phase of her life Louisville, Kentucky. We'll be back with much more Patient Power brought to you by M. D. Anderson Cancer Center right after this.

Genetic Connection

Andrew Schorr:

Welcome back to Patient Power as we continue our discussion about osteosarcoma, and that's part of what they do at the Sarcoma Center at M. D. Anderson. They treat soft tissue sarcoma as well and probably see more sarcoma than anywhere in the country, maybe in the world, so they have a whole team of specialists who support patients and families going through that.

And with us is Dr. Christopher Cannon, who is an orthopaedic surgeon, an oncology orthopaedic surgeon who specializes in that. And we have with us also his patient, Michelle, who has gone through a lot of treatment where there was bone cancer in her pelvis, and now she's doing well and has come out the other side of it, which we're delighted to hear.

Also we want to thank the Sarcoma Alliance for letting people know about this program. They're totally devoted as a patient advocacy group in helping people get better information. And they team up with us and M. D. Anderson. Their website is sarcomaalliance.org.

Let's go back to Dr. Cannon. Dr. Cannon, so first of all is there a genetic connection here? We get e-mail questions, and I know I saw one here from Randall who wrote in from St. Louis, Missouri, and he says, "Is there any genetic connection? Do genes bring it on and anything we can identify?"

Dr. Cannon:

For most people, no. There are a small percentage of people who do have clearly a very strong family, familial inheritance, and have a syndrome, and not only is there a risk for osteosarcoma but a risk for a variety of malignancies, and they'll often

have more than one malignancy. But that's a pretty small percentage of people with sarcoma. So for most people, no. It's just a random event, and there's nothing that they or anyone else did to bring it on.

Andrew Schorr:

Somebody said, Well, could I identify a cause. Do we have any clue what causes it?

Dr. Cannon:

No. There's been nothing either really environmental or otherwise shown to be a cause or a trigger for this.

Andrew Schorr:

Now, we talked about combination chemotherapies and the improvements in that. Does radiation have a place in the treatment of osteosarcoma? I know we've done other programs on the new advances you have at M. D. Anderson including proton therapy, which most medical centers don't have. Does that have a place, or radiation at all, or is it traditionally chemo and surgery?

Dr. Cannon:

It is generally chemotherapy and surgery. Radiation does not in general have a role for treatment of osteosarcomas. There are a few rare occasions where we cannot operate where it's in a place or a location or something where we cannot operate on, and then they can try radiation. But in general we consider it to be a tumor that is not very sensitive to radiation of any type, whether it be conventional radiation or the proton beam. No, mostly it's chemotherapy and surgery.

Andrew Schorr:

I have a list of osteosarcomas here, and there's a big list under the category high grade, and then there's a little bit under intermediate grade and then low grade. Help us understand what those terms mean, high grade, intermediate grade, low grade.

Dr. Cannon:

Well, the designation is made by the pathologist as he looks at it underneath the microscope, and it's just a sign of how active the tumor is, how rapidly the cells are dividing. But roughly it also corresponds with how likely it is to spread from its site or the extremity or the pelvis, spread through the bloodstream to the lungs or wherever. And the low grade ones are less active tumors, not dividing rapidly, less likely to spread, do not generally require chemotherapy. Chemotherapy is not effective and thus not indicated, as opposed to the high grade which is the exact opposite of all those. Most osteosarcomas are high grade. The low grade ones that do not require chemotherapy are pretty uncommon.

What is Chondroblastic?

Andrew Schorr:

Now, I notice just looking at the high grade list there's a pretty long list. So Michelle was diagnosed with chondroblastic, so let's just take that as an example. What does that mean, chondroblastic?

Dr. Cannon:

Well, within the most common type of osteosarcoma is considered a conventional high grade intermedullary osteosarcoma. And then that gets broken down into three sub types, chondroblastic, osteoblastic or fibroblastic. And basically that means the cell they're looking at, it either looks kind of like cartilage, which is chondroblastic, which is what Michelle had, looks a little like bone, which is osteoblastic, which is one of the others, or fibroblastic, which is kind of a fibrous tissue, which is the third type of the conventional high grade intermedullary osteosarcomas.

The Importance of Seeking a Specialist

Andrew Schorr:

Now, often when people come to M. D. Anderson you want to do your own tests. You have your own special pathologists and all that because the diagnosis of which type it is really matters, doesn't it?

Dr. Cannon:

It does, especially between the high grade and the low grade is really critical. And even within the high grade the different sub types can play a role in that. And then the other important part is when--the standard teaching is for the biopsy to be done at the place where the actual treatment will be performed, the chemotherapy and the surgery, because it's possible to really make things difficult if the biopsy is done incorrectly. If the biopsy is put in an incorrect place or contaminates the tissue that we did not want contaminated. It's less likely to be done if a needle biopsy is done, but especially if a surgical biopsy, where they actually go to the OR and they make an incision, harm can be done with that. So that's why in general we like that not to be done at that place that's not familiar with this.

Andrew Schorr:

Okay. So let me underscore that then, see if I understand it right. If someone listening, could be anywhere in the world or across the country, finds that they are diagnosed with a sarcoma or that's suspected, what you're saying is that further investigation would best be done where the sarcoma treatment might ultimately happen and where they specialize in that so no harm is done in kind of poking around in a way?

Dr. Cannon:

Correct. And I think sometimes people or physicians feel like, Well, I can't really send it somewhere unless we have a diagnosis, and I think that's not correct. And I think by looking at the imaging studies, the x-rays, the MRI, the CT scan, they can pretty well determine that Yes, this is something worrisome. Maybe we're not a hundred percent sure what it is yet, but it's something I'm not familiar with, should not be treated here. And then the person should be referred to wherever they want to go for their definitive treatment. At that institution the biopsy can be done and make sure it's done in the appropriate manner and harvested in an appropriate manner and is seen early on by the pathologist with experience with this.

Andrew Schorr:

So the advice that Michelle received from the community oncologist Albuquerque where, you know, I really haven't had a lot of experience with this, and you really need to go to a center where they see this regularly. It seems like with sarcomas and osteosarcomas that is really important advice.

Dr. Cannon:

Yes. And I think he or she is to be commended for that because I think there's often kind of a sense of, Well, I should be able to take care of everything. But I think it's good for someone to say, Well, this is not something I'm used to seeing, and you might be better served elsewhere. So I think that person should be commended for that.

Andrew Schorr:

Now given that--we're learning about all cancers, but just among sarcomas, people really need to find out what their individual situation is, right? Because their prognosis, their treatment plan may vary very much. I mean, if you just were sitting in your waiting room at M. D. Anderson the person sitting next to you may have a very different story, right? So it's important to keep that in mind. We're kind of in the age of more personalized cancer care, aren't we?

Dr. Cannon:

Correct.

Andrew Schorr:

And I know, Michelle, you spent a lot of time in Houston, and what's your feeling about the whole range of care for you and maybe for your family too in supporting you? You were there for a long time, you were hospitalized for a while, as far as that you made the right choice in going there.

Michelle:

Oh, there's no doubt that we made the right choice. I mean had we made a different decision I probably wouldn't be here to talk about it. My husband and I both took tremendous comfort through the entire experience from the fact that

whatever happened we knew that we came where they are the best. You know, we knew that we had done all that we could to get the best care. And it's an amazing facility. From start to finish every aspect of my care was managed beautifully. And the people are so amazing there. And I never had a situation that they couldn't handle. There were a lot of times where I would be scared, where I would have complications or side effects, and I wasn't sure what was going to happen, and my mom would tell me, but Michelle, you have to remember that whatever we've gone to for these people they've always fixed you. So they've seen everything and they know how to handle everything.

Hope for the Future

Andrew Schorr:

Well, that is a wonderful tribute to M. D. Anderson.

Dr. Cannon, let's look in your crystal ball a little bit. So you've been at this a little while, and you may be at it a long time more. I know you're excellent at what you do, and you work with a whole team. For people listening who maybe are just getting a diagnosis and they're wondering is there hope both now and for them in the future, how hopeful are you in what you're doing now and improving it as we go forward?

Dr. Cannon:

Quite hopeful. As I mentioned, it's an area of active research, and I think especially the researchers--and I'm not particularly a researcher--continue to push the envelope and advance the field. And there will be newer and better therapies coming down the line. From my end more with the reconstructions, that continues to improve as well, too. Just our technology, both in the materials we have to use and our understanding of them and the ways we have to make them durable, which is a big issue because all these things we put in fairly young people so they need to last a long time. All that continues to improve. We're kind of in cooperation with the orthopaedic manufacturers who make these tumor implants. So I think things will continue to steadily improve, as far as I see it, with no real ceiling or no real limitation.

Andrew Schorr:

So just so we understand, so somebody a listening and they find out sarcoma is suspected, maybe they live around Houston but maybe they live far away. So what they typically do is they or their doctor contact the Sarcoma Center, and then there are various materials that are forwarded, and then if appropriate work out a schedule for them to come to Houston?

Dr. Cannon:

Correct. And my understanding is, and again forgive me if I'm wrong on this, I think people can self refer here.

Andrew Schorr:

Yes, they can.

Dr. Cannon:

I don't think they even have to be referred by a physician. So going through the M. D. Anderson website they can find the appropriate number to call and they'll get channeled to the right people who will take information and go from there, basically.

Andrew Schorr:

Right. And I did that as a leukemia patient coming from Seattle. And, right, you just go on the M. D. Anderson website. It's very easy to see how you can become a patient and then have your case reviewed by experts such as Dr. Cannon.

Michelle, I wanted to give you sort of the last word here. So there are people listening who maybe have just heard this diagnosis for the first time or suspected diagnosis. You have been really through a lot. And as Dr. Cannon said maybe some people have their tumors in places that don't require as much surgery or maybe even as much chemo, but you're looking on the bright side. What would you say to them to help maybe give them some energy to go forward?

Michelle:

I would say to find what you need to fight for, find your reasons to look toward the future and then never take your eyes off that point. I never stopped believing that I was going to be Florian's mom and that that was my destiny, and I needed to be here to be that for him. And I need to be here to be Erik's wife, and I just never stopped thinking that that was going to be my job.

And, you know, you're going to have your dark days. We all have our dark days, and I went through a lot of dark times and took advantage of M. D. Anderson's psychiatric referral as well. You know, we all need help getting through this because it is a life-changing experience, and it's definitely difficult to navigate emotionally at times. But I'm very fortunate and have been fortunate through the entire journey to be blessed by so, so many people around me that cared and that supported us. And now we're on the other side, and I can't believe that I'm one of those people that's on the other side of cancer, you know. It's almost too good to be true. But thanks to everybody there.

Andrew Schorr:

Thank you. So do you want to say anything to your surgeon, Dr. Cannon?

Michelle:

Thank you.

Dr. Cannon:

You're very welcome.

Andrew Schorr:

Dr. Cannon, thank you, and thanks for those long hours in the OR as well. And also for the whole team at the Sarcoma Center. And again we did a previous program on soft tissue sarcoma. That's all on the M. D. Anderson website. All the replays, all the transcripts, it's all there for you.

In two weeks we're going to go to a whole other area that we probably all need to pay attention to, and that's in the realm of skin cancer. We're going to have with us Dr. Patrick Hwu, who specializes in the treatment of malignant melanoma. So that is coming up on May 20, 2008.

Dr. Cannon, we wish you well and thank you for being with us. All the best in your work with osteosarcoma patients. And, Michelle, I hope you get to be--you know, you want to dance at Florian's wedding, right?

Michelle:

Yeah.

Andrew Schorr:

And his graduation from college. And you want to have grandbabies bouncing on your knee, right?

Michelle:

That's right. That's the goal.

Andrew Schorr:

There you go. All right. Well, I wish you all the best, and I want to thank you for being with us. And to our listeners, thank you for joining us. Hopefully we've given you great information and a lot of hope. For M. D. Anderson, you've been listening to Patient Power. I'm Andrew Schorr. All the best.

Please remember the opinions expressed on Patient Power are not necessarily the views of M. D. Anderson Cancer Center, its medical staff or Patient Power. Our discussions are not a substitute for seeking medical advice or care from your own doctor. That's how you'll get care that's most appropriate for you.