



## **Podcast Transcript: What is myeloma, and how is it treated?**

**HOST:**

Dr. Tricot, thank you for joining us to discuss multiple myeloma.

**DR. TRICOT:**

Thank you, it's a pleasure to be here.

**HOST:**

Can you describe multiple myeloma and where this cancer arises?

**DR. TRICOT:**

Multiple myeloma is a cancer of the bone marrow. The bone marrow produces white cells, and plasma cells are part of our white cells. They are found in the bone marrow but also in the lymph nodes.

Plasma cells are part of our immune system, and the immune system prevents us from having infections and fights cancer in the early stages.

**HOST:**

So what are some of the effects of multiple myeloma?

**DR. TRICOT:**

In addition to having a higher risk of infections, patients with myeloma also tend to have bone disease. And the bone disease in myeloma is caused by the myeloma cells clustering together and causing the bone to be destroyed in places where you have those large clusters of plasma cells.

Myeloma can also cause anemia, which is a low red blood cell count and makes people feel tired.

**HOST:**

Is there a typical first sign of myeloma?

**DR. TRICOT:**

Most patients present with bone pains caused by destruction of bone due to the myeloma cells. But these days we see many more patients presenting to us because abnormal blood levels have been found of total protein. And those levels are checked at regular intervals in some patients who have yearly workups.



When the total protein is high, the doctor will ask for additional testing and will find that there is an abnormal protein in the blood caused by the myeloma cells producing this M-protein, or myeloma protein.

**HOST:**

How is multiple myeloma diagnosed?

**DR. TRICOT:**

Multiple myeloma is typically diagnosed by doing blood work, urine analysis, and also doing a bone marrow aspirate and biopsy and doing some testing to see how extensive the disease is through radiology.

The best test in radiology is either a PET scan or an MRI.

**HOST:**

And when you are doing all these tests, what exactly are you looking for?

**DR. TRICOT:**

The two most important factors that will determine outcome are genetic factors and are factors that are related to the extent of the disease. The genetic factors we will discover by doing bone marrow aspirates and doing chromosome studies, FISH analysis, and also gene expression profiling—all tests meant to discover the genetic changes that take place in the abnormal myeloma cells.

The other set of tests is related to the extent of the disease and, again, the PET scan and the MRI are the most valuable tests to tell us how extensive the disease is.

**HOST:**

And what is it that you will see on an MRI or a PET scan that is indicative of multiple myeloma?

**DR. TRICOT:**

The myeloma cells have the tendency to form big clusters and those big and large clusters can be seen easily on a PET scan and on an MRI and they tell us how extensive the disease is.

**HOST:**

Can you characterize the population that seems to be at risk for this type of cancer?

**DR. TRICOT:**

Multiple myeloma is typically a disease of the older patients. Most of the patients are over the age of 50. The median age is about 67 years old, which means that half of the patients diagnosed with myeloma will be 67 years or older.

It is also clear that the African American population is at higher risk of myeloma compared to the Caucasian people, and that Asian people have a lower incidence of developing myeloma than the Caucasian population.

**HOST:**

Is there anything that you think tends to be misunderstood about myeloma?

**DR. TRICOT:**

The most common misunderstanding is that people think that myeloma is a skin cancer and they confuse it with melanoma. Melanoma is very difficult to treat if it cannot be resected, while myeloma is a treatable disease.

**HOST:**

What is the quality of life for someone who has been diagnosed with myeloma?

**DR. TRICOT:**

The quality of life in myeloma patients is mainly determined by pain and by anemia. The pain caused by myeloma cells destroying bone and the anemia by the bone marrow being overcrowded by myeloma cells and not having enough space to make a good number of red blood cells.

In addition to that, patients may be depressed because they, for the first time, have to deal with the fact that they may die from this disease. So, the anemia, the depression, and the bone pain are the main problems with patients with myeloma.

**HOST:**

And so myeloma can be treated, but there currently is no cure, is that correct?

**DR. TRICOT:**

In the majority of patients, the myeloma will ultimately come back. We can have the patients survive ten years or more in the majority of the cases, but still in the majority the myeloma will come back and will require treatment. Ultimately, most patients will die of their disease. Luckily, now much later than it used to be 15 and 20 years ago.

There are, however, patients—and this is a small percentage of patients, around 15 to 20 percent—who have not had their disease come back within 15 years after their



transplantation. It appears that those patients are cured of their disease. But, again, this is a small fraction of the total group of patients.

**HOST:**

So what kinds of treatment options are there for patients?

**DR. TRICOT:**

These days there are multiple treatment options for patients going from conventional chemotherapy, which was mainly given before the 1990s and had a median survival of two and a half to three years.

In addition to that, we have the newer drugs such as Thalidomide, Lenolidamide, and Velcade, which are given in combination or can also be given in combination with the conventional chemotherapy. Those drugs do better than the older drugs alone and will typically give survivals of about four years.

The best treatment, in our opinion, is to give intensive chemotherapy with transplantation, and we prefer to do two transplants. Then, after transplantation, come in with the newer drugs, usually a combination of Velcade, Thalidomide, and Dexamethasone.

**HOST:**

And so the transplants you recommend to the majority of your myeloma patients are tandem autologous stem cell transplants, is that correct? Tandem meaning two transplants and autologous meaning you use a patient's own stem cells for the transplant?

**DR. TRICOT:**

That's correct. Our studies have shown that allogeneic transplants—meaning using somebody else's cells—are very dangerous to patients and are associated with a 25% mortality rate, not due to the myeloma but due to complications of the allogeneic transplantation.

In contrast, when patients get their own autologous stem cells, the complication rate is two to five percent. And because of the lower complication rate due to the procedure, it is very difficult for us to recommend allogeneic transplantation at this point in time. Studies have shown that there is no benefit in the long term comparing autologous transplantation to allogeneic transplantation.

**HOST:**

What are the benefits of doing two transplants versus a single transplant?

**DR. TRICOT:**

Our studies, and also the studies done in France and in Italy, have shown that if you do two transplants you have longer duration of remission and better survival than if you do only a single transplant.

**HOST:**

And so what is the median survival rate with tandem autologous stem cell transplants?

**DR. TRICOT:**

In the first study we did with tandem transplants, which was started in 1990 and accrued patients until 1994, we had a median survival of about seven years. The second study, which started in 1998, clearly did better than the first study. And the third study, which was called our Total Therapy III, which started in 2004, seems to do better than Total Therapy II.

Based on the initial results, it appears to us that the median survival of newly diagnosed patients with multiple myeloma who go through the whole procedure will be in excess of 10 years.

**HOST:**

Can you tell us a little bit more about autologous stem cell transplantation and, more specifically, how a stem cells transplant actually helps a patient better tolerate the high doses of chemotherapy you use during the treatment process?

**DR. TRICOT:**

An autologous stem cell transplant is meant to provide very high doses of chemotherapy, doses that normally we would not tolerate and it would take us a long, long time to recover our bone marrow cells.

It would take us six to ten weeks to recover white cells and platelets and the risk associated with that would be tremendously high. When we support this high-dose chemotherapy with stem cells—preferentially our own stem cells—we know that the white blood cell count and the platelet count will come back in a hurry and instead of having durations of low white cell counts and low platelet counts of six to ten weeks, we now have on an average a duration of one week of low counts.

This is much better tolerated, has a much lower risk, and has allowed us to do transplants also in older patients over the age of 65.

**HOST:**

So, just to clarify, the stem cells are not the actual treatment? The chemotherapy is the treatment, is that correct?

**DR. TRICOT:**

That's correct. The stem cells allow us to give much higher doses of chemotherapy and the higher the doses of chemotherapy are the more myeloma cells we will kill.

The stem cells are just meant to support the high-dose chemotherapy and make sure that the counts are coming back as quickly as possible and thereby reducing the risk for the patients who undergo this high-dose chemotherapy.

But the active part of the treatment is the high-dose chemotherapy and the stem cells are a support mechanism to make the whole procedure a lot safer.

**HOST:**

So the first step in an autologous stem cells transplant is collecting a person's stem cells so they can later be given back after the chemotherapy. I understand that you don't actually go into the bone marrow to get the stem cells. You trick the stem cells into leaving the bone marrow and coming out into the peripheral blood so you can collect them.

How does that happen?

**DR. TRICOT:**

You can trick the cells from coming out of the bone marrow by the intensive chemotherapy that we give initially, and the more the patient's counts drop, typically the more stem cells will be mobilized from the bone marrow into the peripheral blood.

In the old days we used to collect stem cells from the bone marrow, but that was a very painful procedure and we could also not collect enough stem cells. Not as much as we can do with peripheral blood stem cell collections. The more stem cells we can collect, the safer the procedure of an autologous transplant is.

**HOST:**

And how are the stem cells collected?

**DR. TRICOT:**

After the initial chemotherapy, the patients will have their counts dropping. They will have a low white cell count and a low platelet count, and then around day ten to twelve after the start of the chemotherapy, the counts will start to increase.

When the counts are increasing, we will check the number of stem cells in the peripheral blood. Once that number is high enough, we will have the patient on a machine, which we call an apheresis machine.



The apheresis machine is meant to separate the blood in two parts. One part is the blood and the plasma, which accounts for approximately 99% of our blood, and that part will be given back to the patient.

The one percent remaining will be collected in a bag, and that contains our stem cells. And typically patients will need two or three collections to have enough stem cells for three or four transplants.

**HOST:**

And so you typically only collect stem cells at this one time and then use some of the stem cells to do the tandem transplants and then store remaining ones, possibly for years, to be used later on in treatment if needed, is that right?

**DR. TRICOT:**

Yes, we try to collect enough stem cells initially for three to four transplants. We will do two transplants as the initial treatment, but if patients have their disease coming back after many years then we will perform typically another transplant at that time. So we always try to collect enough for three to four transplants.

**HOST:**

So after the stem cells are collected, you proceed with the two autologous stem cell transplants, and each transplant involves getting high-dose chemotherapy and then getting some of those stem cells back. Tell us more about what happens.

**DR. TRICOT:**

So, after we have given the high-dose chemotherapy and we know for sure that all the chemotherapy is out of the body, we will infuse a patient's own stem cells back as soon as we can. That's usually within 24 hours after the last dose of chemotherapy.

Then we will wait until the counts recover, which typically is about ten days after the infusion of the stem cells. It will take an additional three to four days after the stem cell transplant before the patients are completely cytopenic, meaning having a very low white cell count and platelet count.

**HOST:**

What is the high-dose chemotherapy like?

**DR. TRICOT:**

Again, these are doses that we normally could not give safely without support of stem cells. The most effective drug is high-dose Melphalan—which we give at a dose of about 200mg per meter square—which is about ten times higher than you could give safely if you would not have stem cell support.

**HOST:**

And what are some of the side effects of chemotherapy?

**DR. TRICOT:**

The most severe side effect of the chemotherapy used to be sores in the mouth. We now know that we can avoid most of those complications by giving patients ice in their mouth while the Melphalan is infusing.

However, there are still side effects related to the high-dose chemotherapy, which are mainly severe diarrhea and also loss of appetite and nausea and vomiting. Although, nausea and vomiting is usually not extremely pronounced.

**HOST:**

How long does it take for someone to recover from an autologous stem cell transplant?

**DR. TRICOT:**

Typically, the first three weeks will be the hardest and then patients start to feel better, but it will take about six to eight weeks before people will feel like their old self again.

**HOST:**

Are patients hospitalized while having this type of treatment?

**DR. TRICOT:**

Before we gave peripheral blood stem cells, we used to give bone marrow to support the high-dose chemotherapy. When you give bone marrow, it takes about three to four weeks before the counts come back. That means that the patients have low white cells counts and platelet counts for about three to four weeks.

That was too long and too risky. Patients had to be hospitalized in special rooms.

Now that we give peripheral blood stem cells, the counts come back a lot faster—typically after about one week—and therefore the risk period has decreased tremendously and now we can do this safely on an outpatient basis.

And for patients in general it's much better if it can be done on an outpatient basis. Patients remain active, while if they are hospitalized they typically will get somewhat depressed, will lie in bed, and will not do any type of exercising, and it will take them a longer time to rebound from the transplant than if they remain active on an outpatient basis.

**HOST:**

So all of the autologous stem cell transplants are done outpatient?



**DR. TRICOT:**

Unless we have patients in whom we expect severe complications, or they have the potential of having severe complications, we will do our transplants typically on an outpatient basis.

**HOST:**

But those patients do need to remain in the Salt Lake City area during the treatment process, is that correct?

**DR. TRICOT:**

Yes. It's very important for patients to be able to come to our clinic or be admitted to the hospital very quickly if complications occur.

An infection in a patient who would have a normal white cell count will typically develop very slowly and patients have the time to come to the hospital whenever they can get there.

But, if you have no white cell counts, in a few hours an infection can be overwhelming and can cause major problems. It's important when people have a fever that they come to the hospital immediately, can be helped immediately, that antibiotics can be given immediately, and that we can reduce the risk associated with those types of infections.

**HOST:**

And so even if there are no major complications, how often do those patients come back for a hospital visit during the day while the transplant process is occurring?

**DR. TRICOT:**

In uncomplicated patients, we typically ask them to come back three times a week to be seen. Once the patients are less stable or have complications, they are seen on a daily basis in our clinic.

If the problems are too much to handle on an outpatient basis, we will admit the patients to the hospital.

**HOST:**

So how long do patients need to be in the Salt Lake City area from the time they first start their transplant until the time they can go home?

**DR. TRICOT:**

Typically, it's about three weeks. Sometimes if there are complications it can be longer. Some patients recover very quickly and can go home after two and a half weeks. But, on average, it's about three weeks.



After the first transplant, patients go home for about two months and then will come back for their second transplant. And with their second transplant they again will have to stay close to the hospital for about three weeks.

**HOST:**

And then after that second transplant is done and patients go home, when do they next come back?

**DR. TRICOT:**

About six weeks after they go home after the second transplant they will come back for a consolidation cycle or to start maintenance therapy.

**HOST:**

And so once patients start those two years of maintenance therapy, how often do they need to come back to the hospital for a visit?

**DR. TRICOT:**

The first year of maintenance therapy is still somewhat intensive, and we will see them every three months. Once they are through the first year of maintenance therapy, we will typically see them every six months.

**HOST:**

So what advice can you give to someone who has just found out that he or she has been diagnosed with myeloma or someone who has just found out that a family member, loved one, or friend has been diagnosed?

**DR. TRICOT:**

It is important that they have many different opinions on how they should be treated and, in our opinion, the more aggressive the treatment is, the more likely it is that patients will survive for a long period of time.

There are occasional patients who can do very well with minimal treatments, but the large majority of the patients, if they want to survive more than five years, will have to receive transplantations.

**HOST:**

So then the thought is that while the treatment may be rather intensive, ultimately it will pay off more?

**DR. TRICOT:**

Yes. It will be worse during the treatments, but ultimately the quality of life is determined by how many myeloma cells you can kill, and the more intensive



treatments will lead to more killing of myeloma cells and therefore better quality of life and longer intervals that patients don't need any treatment.

**HOST:**

Ok, Dr. Tricot. Thank you for your time and your insight.

**DR. TRICOT:**

You're welcome.

*To find out more about multiple myeloma and the Myeloma Program at Huntsman Cancer Institute, visit <http://www.fightmyeloma.org>.*