Evaluating A Liver Transplant

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The liver is the largest internal organ of the body, and it is an essential organ that carries out many vital roles of the human body. It is responsible for many things like making proteins and blood clotting factors, manufacturing triglycerides and cholesterol, glycogen synthesis, and bile productions (Benjamin, 2018). Sometimes illnesses or diseases occur in the liver that affect the way it works. After sometime, the organ may start to fail, and that is where a liver transplant would come into play. A liver transplant is a surgical procedure that removes a liver that no longer functions properly and then replaces it with another healthy liver (*Liver transplant*, 2020). These healthy livers are retrieved from deceased donors or the patient can receive a partial part of a liver from a living donor. Usually the liver transplants are not done unless the patient has been having major complications due to a severe liver disease or a sudden failure of a previously healthy liver. The number of people who need liver transplants and are registered on the waiting list exceed the number of available donors. In 2017, there were about 8.000 liver transplants that were done on children and adults in the U.S.. Of those transplants, 360 of the livers were from living donors and there were about 11,500 people registered on the waitlist for a liver transplant (*Liver transplant*, 2020).

With an organ transplant, there are many things that must be done before the surgery can be conducted. The very first step is to research and find a transplant center. Sometimes the patient's doctor will recommend a transplant center, but the patient can still decide where they want to go. When looking into transplant centers, it is important to look into and learn about the number and types of transplants the center performs each year, the transplant survival rates, compare the statistics of the transplant centers through the database maintained by the Scientific Registry of Transplant Recipients, the costs of everything, the technology, and any other additional services that they may provide (*Liver transplant*, 2020). To prepare for a liver

transplant, the patient must go through a preliminary evaluation called Phase I Evaluation (*Liver Transplant Syndrome*, n.d.). During this evaluation, the specialists will determine whether or not a transplant is the right path to take. The transplant team will also be able to review medical records to see what problems the patients have been having or any failures that they have had. The first evaluation will take about a whole day, and the patient may be instructed not to eat or drink anything after midnight the day before because of all the tests they will be doing. They will usually advise the patient to have a support person there to accompany them, and they will also advise the patient to bring two forms of identification, health insurance information, and even some snacks for after the appointment (*Liver Transplant Syndrome*, n.d.). Some tests that will be conducted are blood tests, ultrasounds, a chest X-ray, electrocardiogram, and a pulmonary function test. Ultrasounds, CT, MRI, and angiography are the most common radiological modalities to evaluate the hepatic graft (Fazal, 2020). However, the transplant may be rejected if the patient has a current or chronic infection that cannot be treated, has metastatic cancer, severe heart or other problems, not able to follow the treatment plan, or drinks too much alcohol (*Liver Transplant*, n.d.). Once everything looks good and meets the requirements, the patient will then be accepted for a transplant and be put on the waiting list for the organ.

Before the procedure, the patient must be put on the waiting list for a healthy liver. The transplant priority list is determined by two scoring systems called Model for End-Stage Liver Disease, MELD, for adults and Pediatric End-Stage Liver Disease, PELD, for children under the age of 12 (*Liver transplant*, 2020). Usually the scores for these systems will depend on how urgent the patient needs the transplant and the risk of death within the 90 days without a transplant. The higher the score number the doctors rank the patient, the more urgent the transplant is. Now the next step is waiting for a new liver. The wait will vary greatly, and the

doctors will continue to treat any complications the patient has until they can get a transplant. While the patient waits for their surgery, they must stay healthy as best as they can. Staying active is also recommended since it can help speed up the recovery process after surgery. Doctors will advise to still take any medications prescribed, follow diet and exercise guidelines, keep up with any appointments that are made with the health care team, and stay involved in healthy activities like spending time with family and relaxing (*Liver transplant*, 2020). It is also to stay in touch with the transplant team for any questions that may arise or any changes that may have occurred. Finally it will be time for the procedure. The patient will either receive a liver from a deceased-donor or a partial liver from a living-donor. Before the surgery, the transplant team will do an exam on the patient to make sure they are healthy for surgery. Anesthesia will be used during the procedure to make sure the patient is sedated the whole time. For a liver from a deceased-donor, the transplant surgeon will make a long incision along the abdomen to access the liver.The locations and size of the incision may vary depending on each patient. The surgeon will then remove the diseased liver and replace it with the new liver. The blood vessels and bile ducts will then be reconnected to the donor liver. This process can take up to 12 hours depending on the situation (*Liver transplant*, 2020). For a living-donor liver, the surgeon will remove a portion of the donor liver for the transplant. The surgeon will then move on to remove the diseased liver from the patient and place the donated liver portion into the body. The blood vessels and bile ducts will then be connected and then the incision will be sutured up for healing. The donated liver and the portion left behind during surgery will be able to regenerate rapidly and reach back to normal volume in several weeks (*Liver transplant*, 2020).

After surgery, the patient will be taken into a recovery room for a few hours before being taken to the intensive care unit, ICU. The patient will then be monitored very closely for a few

days when they are in the ICU (*Liver Transplant*, n.d.). The patient will end up staying in the hospital for one to two weeks, sometimes longer, for monitoring. A tube will be inserted in the throat of the patient so that they can breathe with the help of a ventilator. A plastic tube may also be inserted through the nose onto the stomach of the patient as well to remove any air that has been swallowed. The patient will not be able to eat or drink anything until this tube gets removed. Blood samples will also be taken during the stay in the hospital. The transplant team will make sure the new liver is doing well and also make sure the other organs are functioning correctly with no problems occurring. Doppler ultrasound is an important tool used for postoperative management of the liver transplant (Fazal, 2020). IV drips may be used to help control the patients blood pressure, heat, and any bleeding problems (*Liver Transplant*, n.d.). Once everything is stabilized, the tubes may all be removed. The patient will then be able to start eating and drinking. Antibiotics may be given to the patient and anti-rejections will also be given to the patient, which will be closely monitored as well. Once the patient is able to be more mobile and eat more solids, the transplant team will then come in and teach the patient how to care for themselves when they get home. Sometimes there may be problems after the procedure, and then more imaging exams must be done to determine what is going on. Like stated earlier, ultrasounds, CT, MRI, and angiography are great for examining the hepatic graft. Ultrasound is excellent for screening biliary, arterial, and venous problems. Any postoperative complications can be confirmed by contrast-enhanced and non-enhanced CT scans. CT scans are very helpful with seeing any fluids that are present and with drainage (Fazal, 2020). An example of a pathology a sonographer may be able to identify during these exams is an arterial thrombosis. This can become a very serious problem if not identified and cured.

A liver is the second most commonly transplanted major organ (Fazal, 2020). The liver is a vital organ that no one can live without. It carries out many vital roles for the human body to operate properly and maintain homeostasis. It is responsible for the metabolism of drugs and toxins, removing degradation products of the normal body metabolism, and synthesis for many important proteins and enzymes (Hyperarts, n.d.). Many liver transplants are one to replace diseased or failing livers with a normal and healthy one from a donor. Currently, a transplant is the only cure for an insufficient liver (Hyperarts, n.d.). Normal and healthy liver can be donated by deceased or living donors. Patients will be scored on how severe and urgent they need the transplant when they are placed on a waiting list for the organ. Once they are able to receive a new liver, surgery will be done. After the surgery is finished, the patient will stay in the hospital for some time and be monitored. The transplant team will prepare the patient for when they go home and teach them how to take care of themselves once they leave. Sometimes postoperative complications may appear from anytime right after the surgery or not until going home from the hospital. When this happens, imaging exams will be done to see exactly where the compilation is and what the problem is. It is important to keep up with the transplant team and keep them updated on any changes or questions that have risen. Also it is also important to stay healthy and follow the advice that the doctors have given. This will help prevent any other problems.

Resources

Benjamin Wedro, M. (2018, September 20). Liver Function: Tests, Diseases, Symptoms, Causes & Location. Retrieved November 22, 2020, from https://www.medicinenet.com/liver_anatomy_and_function/article.htm

Fazal Hussain, M. (2020, March 22). Imaging of Liver Transplantation Complications: Practice Essentials, Complications, Postoperative Fluid Collections. Retrieved November 22, 2020, from https://emedicine.medscape.com/article/375855-overview

Hyperarts, R. (n.d.). Liver Transplant. Retrieved November 22, 2020, from https://transplantsurgery.ucsf.edu/conditions--procedures/liver-transplant.aspx

Liver Transplant Symptoms. (n.d.). Retrieved November 22, 2020, from https://www.ucsfhealth.org/conditions/liver-transplant/preparation

Liver transplant. (2020, July 15). Retrieved November 22, 2020, from https://www.mayoclinic.org/tests-procedures/liver-transplant/about/pac-20384842

Liver Transplant. (n.d.). Retrieved November 22, 2020, from https://www.hopkinsmedicine.org/health/treatment-tests-and-therapies/liver-transplant