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Patient information

Blood Group Incompatible Kidney Transplantation

Renal Transplant Directorate

ABO (blood group) antibody removal to allow kidney transplantation

Take time to decide whether or not you wish to proceed with a blood group incompatible transplant. This leaflet explains some of the risks and advantages of this type of kidney transplant.

Why is blood group incompatible transplantation being considered?

Transplants are routinely carried out successfully where both the blood group of the donor and recipient are compatible. A kidney transplant from a donor who has an incompatible blood group is usually rejected by antibodies to the donor's blood type this antibody is a natural defense.

What are antibodies?

- Antibodies against incompatible blood groups are likely to damage a kidney transplant if they are in high concentrations
- A blood group incompatible transplant occurs when someone who is blood group O receives a kidney from someone who is group A, or group B, or group AB; or when someone who is blood group A receives a kidney from someone who is group B or group AB; or when someone who is blood group B receives a kidney from someone who is group A or group AB.
- There are two types of blood group A, called A1 and A2. It is easier to do a transplant from a donor who is blood group A2 than someone who is group A1. A1 and A2 is not routinely performed, but will be performed if someone is being assessed as a transplant donor

- For many years, it has not been possible to transplant across an antibody barrier, and people who have antibodies against a transplant do not go ahead with the operation.

In other countries (Sweden, USA and Japan) a procedure has been developed so that blood group antibodies can be removed, in suitable patients before and after the transplant takes place. This allows certain patients to receive a blood group incompatible kidney transplant. Several centers in the UK have now started performing this type of transplant.

What is the procedure?

- Recently, techniques have become available to remove antibodies or to reduce their levels so that transplantation may be possible. The techniques are best developed for people who have living donors. Additionally, some people have antibody levels that are too high for the most modern treatment to overcome.
- The treatment differs from conventional kidney transplantation in that you have to start the treatment programme 30 days (one month) before the planned living kidney transplant.
- You will be given a drug called Rituximab through a cannula (tube) in your vein; this will reduce the antibody production against the incompatible blood group. This drug has been used for many years for a variety of other conditions including lymphoma, cancers and inflammatory diseases such as arthritis. It is proven to be safe but there is a slight increased risk of infections after the treatment.
- The exact treatment schedule varies from case to case, but in the most common situation, antibodies are removed from the blood with a machine.

The procedure is called immunoadsorption. This means being attached to a machine which pumps blood through a special filter – the procedure looks very much like haemodialysis which takes blood away from your body to clean it (dialysed) and returns it to your body at a rapid rate this involves passing all of the blood from your body through the dialyser (filter) and returning it through either a fistula or dialysis catheter.

If someone is on peritoneal dialysis and does not have a fistula, it will be necessary to insert a dialysis catheter (plastic tube) into a vein in your neck, which will remain in place for the two weeks.

The treatment only removes the blood group antibodies. It is safe, although as with haemodialysis your blood pressure may be slightly lower.

The procedure takes approximately three hours a session and will need to be done four times before surgery and three times afterwards. Your antibody level will be checked before and after the treatment in order to make sure they are lowering to the appropriate level.

- Most people will require four sessions of immunoadsorption in the ten days before the transplant and three sessions after the transplant, but an individual schedule will be designed for each person.
- The kidney transplant will take place in the normal way, except that you will need to start the normal anti rejection drugs ten days before the transplant, instead of the day of transplantation. These drugs would be needed even if you received a compatible transplant. Immunoadsorption may be needed in the first week after transplant; and there may be a routine kidney biopsy at seven days after the transplant.

- If rejection occurs or if antibody levels rise it will be necessary to have further immunoadsorption and further anti-rejection drugs.
- Transplantation will only go ahead if the antibody levels are low enough. Approximately 1 in 20 transplants do not go ahead even after undergoing treatment.

What are the risks?

- There are risks of losing the kidney immediately at the time of the operation due to rejection. This does happen occasionally in incompatible transplantation.

This risk can also occur with an ordinary transplant. The results of this type of transplant are the same as an ordinary transplant and compare favourably.

- The risk of death, transplant failure and serious infection applies to all transplants, but it is slightly higher in blood group incompatible transplants. It is difficult to know the exact risk, but it is expected that at least 90 to 95 out of 100 transplants would be working a year after surgery, this compares to blood group compatible transplants. The weeks just before and after the transplant are very stressful, and support from family and friends is essential.
- A successful transplant behaves just like an ordinary transplant after the first few weeks; the body stops producing antibodies against the transplant, and/or the transplant stops being affected by antibodies that are present in the blood. In longer term doses of anti rejection drugs can be reduced to the same levels as in other transplanted patient.

Is the treatment experimental?

Immunoabsorption treatment for transplantation is not in general use throughout the world, and is still under development. Results in the USA, Japan and Sweden over the last ten years have been very encouraging, though the treatment is not successful in all cases. Transplant professionals in the UK have drawn up guidelines for transplantation across incompatible blood groups, and the treatment you will receive is in line with recommendations made by national experts.

What are the alternatives?

One alternative to this treatment is to continue to wait for a kidney transplant from a deceased donor. The waiting time for a transplant from a deceased donor depends largely on the blood group and tissue type. The deceased donor will have to have a blood group compatible with the recipient.

If someone is blood group O, A or AB waiting time is not affected, if someone is group B there may be a longer waiting time. If someone has an unusual tissue type, the wait for a deceased donor kidney that has a good match may be longer. Your transplant team will be able to give some idea of the average waiting time for a deceased donor transplant for someone with each person's blood group and tissue type.

It may also be possible to be considered for a 'paired' or 'exchange' transplant. This may be possible if a donor is compatible with another person with kidney failure, and that other person has a donor that is compatible with the first recipient.

Each donor could then give their kidney to the other recipient, allowing both transplants to take place in the standard manner, without antibody incompatibility.

To explore the possibility of paired donation further, you should discuss your particular circumstances with your transplant team.

What are the side effects of having a transplant?

There are a number of possible side effects, some of which are serious.

- There is a chance of dying from complications before or after the transplant. The usual death rate after a kidney transplant is about 1 in 100 – the exact risk depends on the recipient's physical fitness. The risk of death is likely to be increased slightly after antibody removal.
- Most people get a rejection episode after the transplant with this procedure, compared to about one in three patients receiving a kidney transplant generally. This rejection is usually treatable, but more powerful drugs and extra immunoadsorption may be needed.
- Infections may occur before and after the transplant, because the treatment affects the resistance to infection.
- There is a risk of developing cancer after any transplant, because of the anti – rejection drugs. The risk of serious cancer (lymphoma) is about 1 in 50 in the first year; the risk of this may be increased because of the extra treatment required to overcome antibody barriers.
- The procedure may not result in removal of enough antibodies to make the transplant possible, so it would be cancelled or postponed just before the operation.

Will my medical details be kept confidential?

All information, which is collected, will be strictly confidential. United Kingdom Transplant (UKT), to measure the success of different types of transplant, and to monitor the performance of individual transplant units, keeps some details of every transplant.

Additional information on all patients who receive treatment to reduce their antibody levels will also be retained by UKT. Pooled data will be used to monitor and improve the results of transplantation across antibody barriers, but individuals will not be identifiable from any published articles or presentations.

Where can I find out more information?

You should talk to the surgeon, doctors and nurses who are managing your care and ask any questions you may have.

Further information

National Kidney Federation
www.kidney.org.uk

National Kidney Foundation
www.kidney.org

United Kingdom Transplant Authority
www.uktransplant.org.uk

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