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The Leeds Teaching Hospitals NHS
NHS Trust

Caring for a post liver transplant patient

Information for nurses

The Leeds Teaching Hospitals incorporating:

Chapel Allerton Hospital Cookridge Hospital Leeds Chest Clinic Leeds Dental Institute Seacroft Hospital
St James's University Hospital The General Infirmary at Leeds Wharfedale Hospital

INTRODUCTION

The Liver Unit at St. James's University Hospital, Leeds provides a comprehensive liver service for the population of Yorkshire, Lancashire, North & East Midlands and Cumbria. A major part of this work is the transplant service (approximately 120 per annum).

Following a liver transplant, patients and their families usually feel apprehensive on discharge from the Liver Unit but many prefer a transfer to their local hospital in preparation for discharge home. This also helps involve the referring team in the after care of the patient whom they possibly cared for prior to referral for transplantation.

Liver transplantation remains unique; therefore we can appreciate that nursing a patient recovering from a liver transplant can be an added challenge to the nurse. We recognise your concerns and hope that this document will alleviate them.

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SECTION 1

GENERAL INFORMATION ON MEDICATIONS FOLLOWING A LIVER TRANSPLANT

Medication after a transplant consists mainly of anti-rejection drugs (immunosuppressants), an anti-ulcer drug and prophylactics antibiotics/ anti-virals.

The immunosuppressive drug regime is usually a combination of:

- Cyclosporin **or** Tacrolimus
- Azathioprine **or** Mycophenolate
- Prednisolone

Tacrolimus & Cyclosporin

Tacrolimus and Cyclosporin share similar pharmacological properties and for this reason should NEVER be prescribed together. The principle side effects are nephrotoxicity, hypertension, headache, tremor and tingly hands and feet. Others include hyperglycaemia, hyperkalaemia, disorders of mood and sleep, hallucinations and upset stomach. Increased hair growth and thickening of the gums are caused by cyclosporin only.

Doses of cyclosporin and tacrolimus are titrated according to the desired blood level, time post transplant, renal function and other relevant clinical data. Dosing schedules can vary markedly between patients.

Tacrolimus and cyclosporin are usually taken 12 hours apart. If a patient should forget to take a dose, then the missed dose should be taken at least 6 hours before the next dose is due. It is important that patients do not take double doses.

Many commonly prescribed drugs can produce a clinically significant interaction when taken with cyclosporin and tacrolimus.

Drugs that inhibit the metabolism of cyclosporin and tacrolimus (ie. increase serum levels) include grapefruit juice, erythromycin and fluconazole. Drugs that induce metabolism of cyclosporin and tacrolimus (ie. reduce serum levels) include carbamazepine, phenytoin and rifampicin.

Azathioprine & Mycophenalate

Azathioprine and mycophenolate have similar pharmacological effects and thus should NEVER be prescribed together. Azathioprine is prescribed at a dose of approximately 1-2mg/kg once daily. Mycophenolate is usually prescribed at a doe of 500mg -1g twice daily. Close monitoring of blood results is necessary as they can suppress the production of white blood cells, thereby increasing the risk of infection. Allopurinol, can cause an extremely severe and fatal interaction with azathioprine as it significantly reduces the clearance of azathioprine. The combination of azathioprine and allopurinol should ALWAYS be questioned.

Prednisolone

Corticosteroids are used initially as part of the immunosuppression regime but are usually reduced after a few weeks and in some cases even discontinued with a few weeks. The usual starting dose is 20mg daily. Patients are advised to carry a blue steroid card with them at all times in case of an emergency. It is very important that any healthcare professionals involved in the management of the patient are aware the patient is taking corticosteroids.

Common side effects include hyperglycaemia, indigestion, fluid retention, and osteoporosis (with long-term use only).

At St James's we routinely supply enteric coated preparations. Production of gastric acid is suppressed with ranitidine or lansoprazole during steroid therapy,

Co-Trimoxazole (Septrin)

Co-Trimoxazole is a prophylactic antibiotic treatment given on alternate days for 3 months (starting on day 10 after the transplant). It is used to prevent chest infections caused by Pneumocystis Carinii.

Nystatin

Nystatin is an antifungal mouthwash which is administered whilst patients are on corticosteroids. Once the corticosteroids are stopped the nystatin is usually discontinued.

Ganciclovir

Ganciclovir is an antiviral drug which is given to those patients who did not carry cytomegalovirus (CMV) prior to their transplant (known as a CMV negative recipient) but then received a liver from a CMV

carrier (known as CMV positive donor). The ganciclovir is started on day 10 following transplant and continued for 3 months. The standard prophylactic dose is 1g three times a day; lower doses are required in those patients with renal dysfunction.

Drug interactions

Always check the compatibility of any new drugs being prescribed as they could change the levels of the anti-rejection medication, which if too high could cause side effects, and if too low could lead to possible rejection of the graft. This applies to all prescribed medicines, medicines bought over the counter and herbal remedies. The patient is not allowed to eat grapefruit as this alters the serum level of anti-rejection medication.

Self medication

A few days following transplant patients are entered into the self-medication programme on the liver unit. The programme allows the patient to gradually take more responsibility for looking after and taking their medicines. The patients are given a Medication Record Card (with details of their drugs, doses and administration times) and a copy of the St James's Booklet "You've had a transplant – now what?" This information supplements the education they receive from the pharmacist and nursing staff whilst on the self-medication scheme.

If you operate a self-medication scheme at your hospital it is strongly advised that patients are entered onto the scheme. If you do not run a self-medication scheme then liaise with your ward pharmacist. It may be possible to keep an individually labelled supply of medication for the patient in the main drug cupboard. On the medicines round the patient could be given the supply of medication and could get them ready under the direct supervision of a nurse.

Outpatient follow up at St James's Hospital

If the patient is returning to St James's for an outpatient appointment do not give Tacrolimus and Cyclosporin before the journey as the trough blood level of these drugs need to be measured. Please make sure they bring their medication card with them so it can be altered if necessary.

Following transplant most patients are discharged from hospital after about two weeks. Initially they are reviewed in clinic once a week. This is reduced to every two weeks after 6 to 8 weeks depending on liver function. Is it hoped that the frequency of appointments is then reduced progressively so that by three months post transplantation a patient will typically be seen every 3 weeks, extended to 6 weeks at 6 months and every 3 months beyond one year.

SECTION 2

INFECTION

Due to immunosuppression therapy, patients are more susceptible to infection. Infection is potentially lethal to the liver transplant patient; therefore it is preferable to nurse them in a single room.

Immunosuppressed patients regularly colonise with multi resistant bacteria, therefore a weekly culture screen is advisable. Regular observations to detect the signs of infection or sepsis, i.e. high temperature and low blood pressure, must be recorded. If sepsis is suspected, prompt culture swabs and blood cultures mus be obtained and the Liver Unit notified. Please note fungal infections are common in these patients therefore may be prescribed antifungal treatment.

Always follow your hospital's infection control protocol and inform your infection control nurse.

Some Common Infections following a Liver Transplant

MRSA – Methicillin Resistant Staphylococcus Aureus

VRE – Vancomycin Resistant Enterococcus. Colonisation, usually gastrointestinal tract, frequently in bile ducts and stool.

CMV – Cytomeglovirus, usually occurs 6 weeks to 3 months post transplant. It is a common virus in immunosuppressed patients and requires Ganciclovir treatment. The patient will have an unexplained pyrexia and complain of lethargy.

RESPIRATORY INFECTIONS – Due to the high incidence of pleural effusions which can arise following liver transplant surgery or prolonged post-operative ventilation.

CHOLANGITIS – The liver transplant patient may develop a biliary stricture and will require referral to the Liver Team. The patient may have a pyrexia, complain of abdominal pain, present with jaundice and have deranged liver function tests.

WOUND CARE – Usually the surgical staples will stay in situ for 14 to 21 days depending on the patients healing state. The liver team will advise in the transplant clinic.

If the wound or nearby old drain sites begin to leak, please obtain samples for culture and sensitivity. If the drainage is moderate it is advisable to apply a drainage bag and record the leakage.

Other multi resistant opportunist bacterias commonly seen in transplant patients are:-

- **Acintobacter**
- **Klebsiella**
- **Enterobacter**

SECTION 3

NUTRITION

- Adequate nutrition is essential post liver transplant in order to aid wound healing and replace lost muscle stores. Please ensure your dietician is aware of the patient.

- Patients are encouraged to eat small, frequent meals and snacks, as they often feel full quickly. Extra supplements may have been advised to help meet their increased requirements for energy and protein.

- If the patient has been unable to meet their nutritional requirements orally, tube feeding will have been initiated and should carry on until oral intake is adequate.

- They are not allowed grapefruit or grapefruit juice, as this will affect the absorption of their immunosuppression.

- Food hygiene guidelines are advised in order to avoid foods which have a high risk of Listeria, Salmonella etc.

Eg

NOT ALLOWED –	'Bio' or 'Live' yoghurts	Cream
	Still bottled water	Shellfish
	Ice	Pate
	Soft cheese ie Brie, Camembert	Mayonnaise
	Blue veined cheese ie Stilton	

The patient and/or relatives will have a more comprehensive list of these restrictions and will have been educated about these.

Dietary Advice

Contact: Julie Leaper, Senior Dietician
0113 206 6623

SECTION 4

SOME COMPLICATIONS FOLLOWING A LIVER TRANSPLANT

Graft Rejection

Chronic rejection is seen in 2-5% of patients. They will develop deranged liver function tests and may require a liver biopsy. Depending on the results, drug conversion may be necessary. This will be performed in Leeds.

Hepatic Thrombosis

Late arterial occlusion is often silent. The further out the patient is from their transplant date, the fewer clinical features appear. The liver function tests may deteriorate. This tends to be a slow process but will need an early appointment with the Liver Team.

Renal Impairment

Renal function may deteriorate. Close observation of biochemistry is important. The Liver Unit must be notified for advice because the immunosuppression medication is nephrotoxic and adjustments may be necessary. This is particularly important when prescribing drugs that can affect kidney function, like no-steroidal anti-inflammatory drugs, diuretics and certain antibiotics.

Bile Duct Stenosis

Bile duct stenosis is suspected when the alkaline phosphatase and bilirubin start to rise. A stent may be required, or alternatively some patients require a biliary reconstruction.

SECTION 5

FOLLOW UP CARE AFTER A LIVER TRANSPLANT

Initially for the first 6-8 weeks patients should be seen weekly by the Liver Team in Leeds. (It is important that the patient is not given her/his immunosuppression on the day of the clinic to enable us to obtain a blood sample to determine suitable immunosuppression levels). Too much or too little could be detrimental to the patient's health and graft.

A visit to Leeds also gives the Hepatology Liaison Nurse the opportunity to continue the patient's discharge education assessment, which must be completed, prior to the patient's discharge home.

Shared Care – After 8 weeks, patients who live in certain distant areas are often seen alternate weeks, shared with their local consultant. After transplant, clinic visits will decrease providing the patient is stable.

Please note that both nursing and medical staff are available 24 hours a day and we will be pleased to give you advice.

During admission the patient and family will have been seen by the unit social worker Rosemary Cheshire. Any appropriate follow up will be offered, but if you have concerns, or feel Rosemary's input could help, do make contact on the telephone number given on the page.

CONTACT NUMBERS/FURTHER INFORMATION

St James's Switchboard
0113 243 3144

Liver Unit
0113 206 5771 (direct line)

Chris Sutton,
Hepatology Liaison Sister
0113 206 5771
or via switchboard Ext.66585
Bleep 07659 533 528.

Debbie Cooke,
Liver Unit Pharmacist
via switchboard on bleep 6133.

Catherine Hughes,
Outpatient Pharmacist
via switchboard on ext 65076

Julie Leaper,
Dietician
0113 206 6623
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Rosemary Cheshire,
Medical Social Worker
direct line 0113 206 4628
or bleep 6100.

CHRIS SUTTON - Hepatology Liaison Sister

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