LIVER TRANSPLANT QUICK GUIDE

Dec 2020

THIS QUICK GUIDE DOES NOT REPLACE THE LIVER TRANSPLANT PROTOCOL AVAILABLE ON THE INTRANET AND THE FULL PROTOCOL SHOULD BE REFERRED TO WITH ANY QUERIES AND FOR FULL INFORMATION

On arrival

1. **Take handover** from anaesthetist in the usual manner and examine the patient.
2. **Airway and breathing.** Patients arrive intubated and ventilated and will remain so until gas exchange, circulation, renal function, and graft function (usually defined by post-operative Doppler USS) are stabilised and satisfactory. This is usually less than 24 hours and is often less than 12 hours.
3. **Pulmonary artery catheter.** Patients will most often have a pulmonary artery catheter placed in theatre. This should be attached to the monitor on arrival. It is expected that these patients are hyperdynamic post operatively with a cardiac output/index that is approximately twice the usual value. A "normal" cardiac output/index should cause concern.

Charting

Fluids	**5% glucose at 1ml/kg/hr**	
Analgesia	**Morphine 1mg IV prn**	*Fentanyl is an alternative in appropriate patients. Once able to use a PCA then this should be charted.*
	Paracetamol 1g PO/NG q6h	
Routine medications	**Omeprazole 20mg NG daily**	*These patients are at an increased risk of GI bleeding.*
	Folic acid 5mg IV daily	
	Vitamin K1 10 mg by slow IV injection daily for three days	*This compensates for any potential preoperative deficiency in Vitamin K.*
Antimicrobials/antifungals	**Cephazolin 1g IV q8h 3 doses postop**	
	Fluconazole 100mg NG daily	*For high risk patients liposomal amphotericin may be used. Transplant physician will advise If a patient returns to theatre (e.g. for bleeding) then they should receive liposomal amphotericin 1mg/kg for 5 days.*
Immunosuppression	**ALL IMMUNOSUPPRESSION DECISIONS ARE MADE IN CONJUNCTION WITH THE LIVER TEAM. COMMON OPTIONS ARE NOTED BELOW.**	
First line (No renal dysfunction)	CORTICOSTEROID **On return to DCCM:** **Methylprednisolone 20mg IV once** **From Day One post operatively:** **Convert to oral/NG prednisone 20mg daily once eating**	*IV methylprednisolone should continue if the patient is not eating or if there is concern over enteral absorption.*
	CALCINEURIN INHIBITOR **Tacrolimus 0.0625mg/kg oral/NG q12h** **Given at 10am and 10pm.** ***(Give initial dose up to 2 hours after prescribed time)***	*Convert to oral when eating.* *The timing of the doses enables appropriate testing of levels.* *The dose is adjusted in renal failure, severe graft dysfunction, or after checking levels.* ***This is guided by the Liver Transplant Specialist.***
In renal failure (RESPECT protocol)	CORTICOSTEROID **As per first line corticosteroid (see above)**	
	IMPDH INHIBITOR **Mycophenolate 1g oral/NG q12h**	
	INTERLEUKIN-2 INHIBITOR **Basiliximab 20mg IV single dose STAT**	*Give within 6 hours of arrival.* *Also given on day 4 post operatively.* *If large volumes of bleeding (i.e. greater than 200mls/hr or bleeding requiring reoperation) then the timing of basiliximab should be discussed with the consultant.*

Medications that should **NOT** be charted or are contraindicated

Erythromycin Erythromycin inhibits the metabolism of tacrolimus via the Cytochrome P-450 3A subfamily, increasing tacrolimus concentrations to potentially toxic levels. This may cause nephrotoxicity.

NSAID Non-steroidal anti-inflammatory medications should not be given to patients post liver transplantation as these can potentiate calcineurin inhibitor induced nephrotoxicity.

Physiological targets

Heart Rate (HR)	**60 – 120/min**	
Mean Arterial Pressure (MAP)	**70 – 100mmHg**	
Haematocrit (Hct)	**0.25 – 0.30**	*To keep viscosity low and minimize the risk of hepatic artery thrombosis.*

Investigations

1. **CXR; 12 lead ECG; ABG; FBC; Extended biochemistry; Full coagulation profile –** are initial investigations. Ongoing investigations will be guided by the DCCM intensivist but as a minimum, a **full set of bloods** (FBC, extended biochemistry, coagulation profile, ABG) should be performed **every 6 hours** in the immediate post-operative period.
2. **Abdominal Film (AXR) -** All patients should have an abdominal x-ray performed post-operatively. This is to exclude any retained swabs and may occur in theatre. It is the surgeon's responsibility to check this.
3. **Doppler Ultrasound -** Usually requested by the Liver Transplant Fellow in the routine postoperative transplant cases. *In certain circumstances it will be requested by the DCCM registrar and in these cases it is imperative that the sonographer understands this is for a liver transplant Doppler (as there are specialist sonographers that deal with this).*

Common issues

Hypotension Treat hypotension with appropriate colloid in the first instance (eg. 4% albumin or blood products).

Disordered coagulation In the absence of bleeding, don't correct PR as this is a marker of hepatic function. If the PR rises to >2 then notify the surgeon and ICU SMO.

Bleeding Evident bleeding (either as loss from drains or as transfusion requirement) of more than 200ml/hour should be replaced as required, coagulation should be aggressively corrected and the situation discussed within two hours with the Transplant Surgeon. Re-operation may be required. Sudden massive bleeding usually indicates vascular anastomotic failure and immediate re-operation is required.

Re-operation/acute liver failure These and other high risk patients will often have liposomal amphotericin (1mg/kg) in the place of fluconazole. This is guided by the transplant physician.

Antivirals Antivirals for CMV and Hepatitis B virus prophylaxis depend on donor/recipient viral status. The options for this include valganciclovir and Hepatitis B immunoglobulin respectively. This will be guided by the transplant physician.

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