



ACUTE LIVER FAILURE

No cirrhosis · coagulopathy + encephalopathy

CALL THE

transplant centre

DEFINE: acute liver injury + COAGULOPATHY (INR ≥ 1.5) + ANY ENCEPHALOPATHY, in a patient with NO pre-existing liver disease. This is not decompensated cirrhosis - the management and prognosis are different.

FIND THE CAUSE

- **Paracetamol** - commonest in the UK/US - treat with NAC even if late or level unknown
- **Other drugs** - anti-TB, anti-epileptics, antibiotics, herbal / recreational; idiosyncratic
- **Viral** - hepatitis A / B / E, HSV (give aciclovir if suspected), CMV
- **Vascular / other** - Budd-Chiari, ischaemic hepatitis, Wilson's, autoimmune, pregnancy (HELLP, AFLP)

INVESTIGATE

- **Bloods** - LFTs, INR (the key prognostic marker), lactate, glucose, ABG, renal, ammonia
- **Screen** - paracetamol + salicylate level, viral serology, autoimmune, ceruloplasmin, toxicology
- **Imaging** - liver ultrasound with Dopplers (exclude Budd-Chiari); CT head if $\downarrow$ GCS
- **Do NOT** - correct the INR routinely - it is your best prognostic marker

KING'S COLLEGE CRITERIA

predicts death without transplant - refer EARLY, don't wait

	Transplant if...	
PARACETAMOL	Arterial pH < 7.30 after resuscitation	OR all three below
	INR > 6.5 · creatinine > 300 $\mu\text{mol/L}$ (3.4 mg/dL) · grade III-IV encephalopathy	
NON-PARACETAMOL	INR > 6.5 alone	OR any three below
	Age < 10 or > 40 · INR > 3.5 · bilirubin > 300 · jaundice > 7 d before encephalopathy · drug / indeterminate cause	

Lactate > 3.5 after early fluid resuscitation is an additional adverse marker in paracetamol ALF.

MANAGE

supportive care + treat the cause + transplant referral

N-ACETYLCYSTEINE

Give for ALL paracetamol ALF regardless of timing; also improves outcome in NON-paracetamol ALF.

CEREBRAL OEDEMA

The main cause of death. Head up 30°, sedate, normocapnia, Na 145-155, avoid hypotonic fluid. Grade III-IV $\rightarrow$ intubate.

ORGAN SUPPORT

Glucose infusion (hypoglycaemia is common). Vasopressors for MAP. CRRT early for ammonia / renal failure. Watch for sepsis.

AMMONIA MATTERS HERE (unlike cirrhosis): > 150-200 $\mu\text{mol/L}$ predicts intracranial hypertension. Consider CRRT to clear it, avoid the surge from GI bleeding / sepsis, and discuss ICP monitoring with the transplant centre.

WATCH FOR

what actually kills these patients

INFECTION

Functionally immunosuppressed; up to 80% get infected. Low threshold to culture and treat - fever may be absent.

HYPOGLYCAEMIA

The failing liver stops making glucose. Check hourly at first; run a 10-20% dextrose infusion.

RENAL FAILURE

Common, especially with paracetamol. Start CRRT early - it also clears ammonia and controls sodium.

ENCEPHALOPATHY GRADE drives the plan: I altered mood / sleep · II drowsy, confused, asterixis · III very drowsy but rousable, incoherent · IV coma. Grade III-IV $\rightarrow$ INTUBATE, nurse head-up 30°, manage as raised ICP, and the transplant centre should already know about them.

PEARLS & PITFALLS

- Refer to the transplant centre EARLY - on suspicion, not once King's criteria are met; late referral loses the window.
- Give N-acetylcysteine for paracetamol ALF whatever the timing, and consider it in non-paracetamol causes too.
- Do not routinely give FFP to fix the INR - you blind yourself to the single best prognostic marker.
- Cerebral oedema, not liver failure itself, is what usually kills - manage it like raised ICP (see #52).

References: AASLD Acute Liver Failure · EASL ALF 2017 · King's College criteria (O'Grady 1989).

Educational aid; verify doses against local protocol and patient factors.

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