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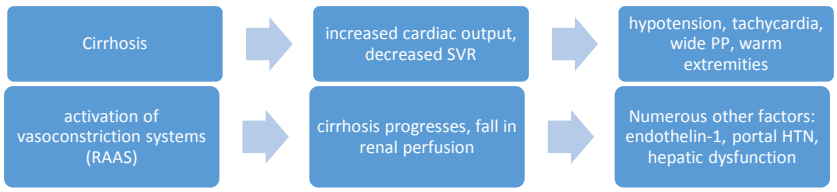
Hepatorenal Syndrome
Renal failure **without** renal pathology
Seen in 10% of **advanced cirrhotics**

Pathophysiology:



Etiology
Half of patients who develop hepatorenal syndrome (HRS) are admitted with ~normal renal function
* Treatments lead to decrease in effective arterial circulation → increased renal hypoperfusion, decrease GFR
- **diuretics** (pts with refractory ascites may only excrete 500cc urine/day w/ normal creatinine)
- **large volume paracentesis** – reduction of rate of removal can help prevent hepatorenal. SVR further decreases 24 hours after large volume paracentesis
* **SBP**: 30% of SBP pts develop HRS 2/2 further vasodilation
* **GI bleeding**: initial event (hypovolemic shock) may lead to ATN, but SIRS may further reduce SVR. Pts are also more likely to develop SBP – therefore prophylactic antibiotics reduce risk of HRS
* **NSAIDs**: inhibit prostaglandins → renal vasoconstriction. Cirrhotics need RAAS to maintain BP

Clinical Findings
- Type I HRS: 50% have clear, precipitating event. Rapidly progressive loss of renal function over days. Often, floridly ill patient
- Type 2: slowly progressive renal failure. In comparison to type I, more mild presentation of liver failure

Evaluation
- Thorough history to assess for recent insult – large volume paracentesis, SBP, diuresis
- Septic work-up as cirrhotic may not mount fever or leukocytosis

Treatment
- Need to **rule out other causes** of worsening renal function
- **Fluid challenge** to assess for sub-clinical hypovolemia
- **Midodrine** (oral alpha adrenergic agonist) → improves SVR, improves renal perfusion
- **Octreotide (in combination with midodrine**, neither in isolation shown to be effective)
    - Review in *Ann Pharmacother* showed nebulous results for the use of these agents and suggested further studies
    - Study in *Hepatology* discussed use of these two medications as medical bridging to liver transplantation or TIPS

- Terlipressin (not approved in US) has shown some benefit
- Extracorporeal Albumin Dialysis – allows clearance of vasodilatory agents
- **TIPS** – may treat type 2 HRS

References / Further Reading

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