

Patients with Hepato-Renal  
Syndrome;  
Should They Be Dialyzed?  
PRO

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GOTHI

# Is Mortality of HRS-1 Needing Dialysis is Worse than that of Any Other Cause of AKI

- It all started with the extremely disappointing results in a report dated 1975 stating that among 25 patients with cirrhosis and AKI requiring dialysis, the in-hospital mortality rate was 100%

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Renal and Electrolyte Disorders in Liver Disease  
Session I: Occurrence and Management of Renal Failure

Use of dialysis in the treatment of renal failure in liver disease **FREE**

Victor Parsons, S. P. Wilkinson, M. J. Weston

**Abstract**  
Early and thorough peritoneal and haemodialysis has a part to play in the management of selected patients with hepato-renal failure. Patients with advanced irreversible hepatic damage due to cirrhosis, however, may have their prognosis shortened by dialysis, but there are many problems in these techniques in patients with multiple organ failure which still require investigation and solution.



Parsons et al., Postgrad Med J 51: 515–520, 1975

# Cons to this Article

- The report included ten patients with HRS-1 and 11 with acute tubular necrosis (ATN), and fatalities occurred in both subgroups.
- Most patients in that study were treated with peritoneal dialysis rather than hemodialysis, whereas current practice strongly recommends hemodialysis and continuous RRT (CRRT)
- To challenge the concept of worse outcome with HRS,
  - A more recent study by Allegretti et al., 2018 , a study involving 472 patients with cirrhosis and AKI who underwent dialysis, the mortality rates of those with HRS-1 as a cause of AKI was **84%** whereas those with ATN the mortality was **85%**

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## ✓ Prognosis of Patients with Cirrhosis and AKI Who Initiate RRT

Andrew S. Allegretti, Xavier Vela Parada, Nwamaka D. Eneanya, Hannah Gilligan, Dihua Xu, Sophia Zhao, Jules L. Dienstag, Raymond T. Chung and Ravi I. Thadhani

CJASN January 2018, 13 (1) 16-25; DOI: <https://doi.org/10.2215/CJN.03610417>

# First Argument

- HRS-1 patients requiring dialysis carries high mortality rates, that is why they are not dialyzed
- But other cases with AKI and liver cirrhosis also carries high mortality and yet we readily dialyze them (HRS-3)

# Diagnosis Of HRS-1

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- It is critical to correctly diagnose HRS-1 correctly
- Criteria of diagnosis developed by the International Club Of Ascites (ICA)

1. Cirrhosis with ascites;
2. Serum creatinine  $> 133 \mu\text{mol/L}$  (1.5 mg/dl);
3. No sustained improvement of serum creatinine (decrease to a level of  $133 \mu\text{mol/L}$  or less) after at least 2 days of diuretic withdrawal and volume expansion with albumin. The recommended dose of albumin is 1 g/kg of bodyweight per day to a maximum of 100 g/day;
4. Absence of shock;
5. No current or recent treatment with nephrotoxic drugs;
6. Absence of parenchymal disease as indicated by proteinuria  $>500$  mg/day, microhematuria ( $>50$  red blood cells per high power field) and/or abnormal renal ultrasonography.

# Diagnosis of HRS-1

- Many pitfalls in using these criteria
  - an examination of documented discharge diagnosis codes revealed that a correct diagnosis of HRS-1 was only assigned to 27 of 46 (**59%**) of hospitalized patients with cirrhosis
    - Uhanova et al., Am J Gastroenterol 97: 2046–2050, 2002
  - In a single-center study, manual review of medical records determined that correct adjudication of HRS-1 as a cause of AKI occurred in only 27 of 73 (**37%**) individuals with AKI and decompensated cirrhosis
    - Velez ae al., Nephron 131: 191–201, 2015
  - Even in an attempt to employ computational diagnostic algorithms, 104 of 504 (**21%**) of patients were categorized as “maybe HRS-1” or “indeterminate”
    - Koola et al., J Biomed Inform 80: 87–95, 2018

# It is Not Always HRS-1 Alone!

- The pathogenesis of HRS-1 involves several mechanisms due to effects of cirrhosis-induced circulatory dysfunction and maladaptive kidney perfusion, where the main event is intrarenal vasoconstriction
- Early in the process of HRS-1 before actual kidney injury due to liver dysfunction, the kidney may be vulnerable to injury by other factors such as hypovolemia, infections, bile acids and nephrotoxic medications
  - Where a minor insult may cause severe injury to this predisposed kidney
- Thus, Patients with 'pure' HRS-1 might constitute only subset of patients who have kidney dysfunction.
  - While the remaining patients have both HRS-1 and other causes of AKI
    - Velez et al., Nephron 131: 191–201, 2015

## Second Argument

- I cannot take a “Life Ending” decision with the lack of a gold-standard test for diagnosis of HRS-1

# Dialysis to HRS-1, Is it Completely Hopeless?

- Because dialysis is not offered in many instances under the concept of being hopeless or futile, there is not much data assessing their outcomes
- However, In a descriptive study including 27 patients with HRS-1 as a cause of AKI, the role of hemodialysis was examined.
  - The 1-year survival rate for those who received acute hemodialysis was 28% compared with only 2% for those with AKI who were not dialyzed, although it was indicated
    - Keller et al., Ren Fail 17: 135–146, 1995

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> Ren Fail. 1995 Mar;17(2):135-46. doi: 10.3109/08860229509026250.

# Risk factors and outcome of 107 patients with decompensated liver disease and acute renal failure (including 26 patients with hepatorenal syndrome): the role of hemodialysis

F Keller <sup>1</sup>, H Heinze, F Jochimsen, J Passfall, D Schuppan, P Büttner

Affiliations + expand

PMID: 7644764 DOI: 10.3109/08860229509026250

## Abstract

The prognosis of acute renal failure in patients with preexisting liver decompensation is poor, and

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## Third Argument

- It seems dialysis is not as futile or hopeless as anticipated

# Decisions

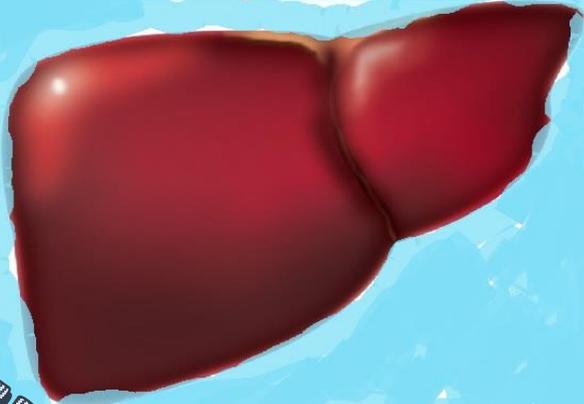
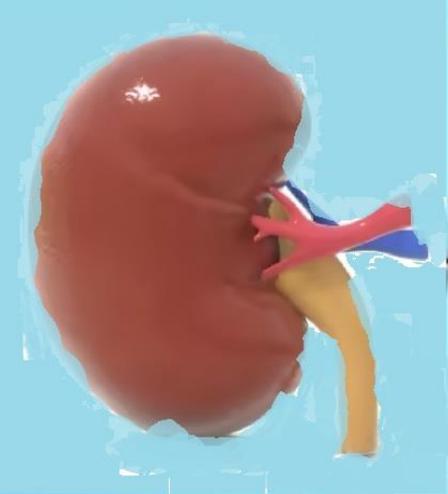
- I'll distribute all these patients into four categories
  - For patients listed for liver transplantation, there is no doubt that offering dialysis is a reasonable step to take
  - If liver transplantation is not settled on
    - Consider those **patients as likely to benefit from liver transplantation.**
    - Therefore, one should lean toward offering them dialysis until a clear settlement is reached

# Patients Ineligible for Liver Transplantation

- Typically, Patients who are critically ill with AKI and have multiorgan dysfunction and in intensive care units
- Look for terminal signs
  - mechanical ventilation
  - vasopressor support
  - coma
  - dependence of CRRT without reasonable expectation for AKI reversibility
- I believe that performing dialysis would be useless (Futile)

# Last Conclusion

- In the Absence of these solid premortal elements
- I suggest confronting family to understand the patient's wishes,
  - explain the maintenance of life by virtue of dialysis for additional weeks or months of their lives may not provide comfort
  - For many patients and their families , extra days, weeks, or months of life can be very meaningful
  - For others, prolonging the inevitable is not an option



THANK YOU