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CASE REPORT

A case report of Grade I Hepatic Encephalopathy in a chronic alcoholic liver disease patient

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Abstract: This case report discusses about a 49-year-old male with grade I hepatic encephalopathy, a complication of chronic alcoholic liver disease. With a 20-year history of heavy alcohol consumption and recent cirrhosis diagnosis, the patient presented symptoms such as confusion, disorientation, drowsiness, and abdominal distension. Physical examination revealed icterus, pitting edema, hepatomegaly, and mild ascites. The comprehensive treatment regimen addressed various aspects of the patient's condition. Lactulose syrup reduced gut ammonia levels, ceftriaxone and rifaximin prevented enteric infections, and a frusemide/spironolactone combination reduced ascitic fluid. Vitamin B supplements aided neurological repair, dexamethasone served for its anti-inflammatory effects, and protein supplements corrected malnutrition. Liver supportive measures included alcohol abstinence and paracentesis to drain excess ascitic fluid. The patient exhibited significant improvement in symptoms and laboratory parameters during the hospital stay. Liver and kidney function tests normalized, and coagulation profiles steadily improved. Confusion and disorientation resolved completely, and repeat ultrasound confirmed a reduction in ascitic fluid. The patient was discharged in a stable condition. This case highlights the importance of a holistic therapeutic approach to effectively manage grade I hepatic encephalopathy secondary to alcoholic liver cirrhosis. Addressing multiple contributing factors, including abstaining from alcohol and employing pharmacological, nutritional, and procedural interventions, can lead to the reversal of mild hepatic encephalopathy.

Keywords: Hepatic encephalopathy; Cirrhosis; Alcoholism; Liver function; Holistic treatment.

1. Introduction

Alcoholic liver disease (ALD) refers to a spectrum of liver pathology caused by excessive alcohol consumption ranging from simple steatosis to cirrhosis. It is one of the leading causes of chronic liver disease worldwide [1, 2]. Long standing heavy alcohol intake damages the liver cells leading to fat deposition, inflammation and fibrosis over a period of time. This can ultimately result in cirrhosis where the liver architecture is severely disrupted due to scar tissue formation.

Cirrhosis of liver impairs its function to clear gut derived toxins like ammonia from the bloodstream. Increased amounts of ammonia crossing the blood brain barrier can cause hepatic encephalopathy (HE) [3-6]. HE describes a range of neurological symptoms seen in patients with liver dysfunction and portosystemic shunting, caused by the effect of toxins on the brain. It can present as subtle abnormalities in neurological exam to coma. Grading scales like West Haven criteria are used to classify the severity of HE. Grade I HE involves mild alterations in cognition without any motor signs [7-9]. The pathophysiology involves astrocyte swelling secondary to increased glutamine levels from ammonia metabolism within the brain. Current treatment aims to reduce sources of ammonia production like alteration of gut bacteria and impairing ammonia absorption from the gut [10]. Mild cases are managed medically, while severe cases may require emergency interventions and intensive care unit care. Treatment involves non-absorbable disaccharides, antibiotics, albumin, ornithine, phenylbutyrate, rifaximin etc [11].

However, many a times patients with ALD-related HE continue to have neurological symptoms despite standard medical therapy indicating the need for additional therapeutic modalities. This case report aims to describe the effective management of a patient with grade I HE due to alcoholic cirrhosis through a holistic treatment approach targeting multiple disease processes. The objective is to highlight the role of comprehensive pharmacological, nutritional and procedural interventions along with abstinence from alcohol in reversing mild hepatic encephalopathy in such patients.

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2. Case presentation

2.1. Clinical features

A 49-year-old male patient presented to the hospital with complaints of confusion, disorientation and drowsiness for 1 month. He also reported reddish discoloration of urine and lower limb swelling since last month. On examination, the patient had pallor, icterus and pitting edema in both lower limbs. His vitals showed a blood pressure of 100/60 mmHg and pulse rate of 88/min.

2.2. Diagnosis

Initial laboratory investigations revealed mild anemia, thrombocytopenia and abnormal liver function tests. His total bilirubin was 1.4 mg/dL with conjugated bilirubin of 1 mg/dL. Alkaline phosphatase level was elevated at 162 IU/L. Blood urea and serum creatinine were slightly elevated indicating mild renal dysfunction. Total serum protein and albumin levels were low at 1.7 g/dL and 1.7 g/dL respectively, suggesting hypoalbuminemia. Serum glutamic-oxaloacetic transaminase (SGOT) and Serum glutamic pyruvic transaminase (SGPT) levels were mildly elevated at 46 IU/L and 41 IU/L respectively. Liver elastography showed features suggestive of moderate ascites and mild hepatic fibrosis seen as coarse echotexture of the liver. The patient gave a history of heavy alcohol consumption for 20 years and had quit drinking 2 months back. He also had a past history of cerebrovascular accident 6 years ago for which he was on antiplatelets. Based on these clinical features and investigations, a diagnosis of cirrhosis of liver with grade I hepatic encephalopathy was made in the patient with history of chronic alcohol abuse [12-14].

2.3. Treatment

The patient was started on the following treatment:

- Lactulose syrup 30ml thrice daily to reduce gut ammonia levels and correct constipation.
- Intravenous ceftriaxone 1g twice daily and oral rifaximin 550mg twice daily to prevent infections and reduce gut bacteria.
- Frusemide 40mg and spironolactone 50mg twice daily to reduce ascitic fluid build up.
- Thiamine supplementation 100mg twice daily to help repair neurological damage.
- Dexamethasone 10mg once daily for its anti-inflammatory and immunomodulatory effects.
- Protein supplements like skimmed milk powder twice daily to correct any malnutrition.
- Strict abstinence from alcohol consumption.
- Diagnostic paracentesis was performed to drain 2000ml ascitic fluid from the abdomen.

The patient showed compliance to treatment and dietary modification. He was regularly monitored for any complications. Table 1 shows the improvement in the patient's status

Table 1. Results of the laboratory investigations of the patient before and after the treatment

Investigation	Time of admission	Before discharge	Reference range
Hb(gm/dl%)	11.3	12.5	13-17
WBC(cells/cumm)	11200	10000	4000-11000
Total Bilirubin (mg/dl)	1.4	1.2	0.2-1.2
Conjugated bilirubin	1.0	0.5	0.0-0.3
Alkaline Phosphate(IU/L)	162	110	42-128
Blood Urea(mg/dl)	21	18	12.6-42.6
Creatinine (mg/dl)	0.5	0.6	0.5-1.4
Total Protein (g/dl)	6.0	7.3	6.0-8.0
Albumin (g/dl)	1.7	2.5	3.5-5.2
SGOT(IU/L)	46	35	5-34
SGPT(IU/L)	41	40	upto 45

3. Discussion

The patient presented with features suggestive of grade I HE secondary to decompensated alcoholic cirrhosis of liver. A multimodal therapy targeted at reducing gut absorption and production of ammonia as well as correcting fluid, electrolyte and nutritional abnormalities. Lactulose improves HE by reducing gut bacteria and ammonia absorption. Antibiotics prevent infection and further decrease gut flora. Diuretics reduce fluid overload while supplements aid repair of damaged cells. Corticosteroids curb inflammation

and its deleterious effects on the liver. Over the hospital stay of 2 weeks, there was significant improvement in patient's mental status, abdominal symptoms and laboratory parameters. His confusion resolved completely with treatment. Repeat ultrasound showed lesser ascites. This case illustrates that addressing multiple factors through a holistic approach results in better management of mild HE compared to conventional therapy alone. Timely intervention and continued adherence can help reverse grade I HE and prevent further decompensation in such patients..

4. Conclusion

This case report demonstrates the effective resolution of grade I hepatic encephalopathy in a chronic alcoholic liver disease patient through a comprehensive therapeutic strategy. The multi-pronged approach involved reducing gut production and absorption of ammonia, modulating liver inflammation, correcting fluid overload and malnutrition. Key aspects included lactulose, antibiotics, diuretics, supplements, corticosteroids and dietary modifications along with abstinence from alcohol. A significant improvement was observed in patient's neurological and biochemical abnormalities with this holistic treatment regimen over a period of 2 weeks. The case highlights the importance of targeting multiple disease processes simultaneously for optimal management of mild hepatic encephalopathy in alcoholic liver cirrhosis. A multimodal approach can aid in reversing grade I encephalopathy and help prevent disease progression, if patient adherence is ensured.

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Author's short biography

Suberna Basnet

I am Suberna Basnet, a prospective Pharm-D student with a fervent interest in enhancing patient healthcare through comprehensive pharmaceutical care. Currently enrolled in the Pharm-D program, I am concentrating on drug therapy optimization and patient counseling. I am enthusiastic about applying my theoretical knowledge in real-world clinical settings. I demonstrate a robust work ethic, adaptability, and a dedicated commitment to continuous professional development in the field of clinical pharmacy.

Ali Nihal

I am a Pharm-D student actively engaged in providing clinical pharmacy services. I am interested in the domains of clinical pharmacy practice and harbors a deep interest in research endeavors. Driven by a passion for educating patients on medications, along with a dedicated focus on drug dosing and interactions, I aspire to make a meaningful contribution to the field of pharmacy

Sai Vijaya Durga Yalla

Dedicated aspiring PharmD student with a commitment to advancing pharmaceutical knowledge and enhancing patient care. Possessing a robust foundation in biology and chemistry, coupled with a passionate drive to improve healthcare outcomes. Eager to contribute to the field through academic excellence and a steadfast commitment to compassionate, evidence-based pharmacy practice.

Sanjana

I am Sanjana, an aspiring Pharm D student with a passion for optimizing patient healthcare through comprehensive pharmaceutical care. I am currently pursuing the Pharm D program with a focus on drug therapy optimization and patient counseling. I am eager to apply my theoretical knowledge in real-world clinical settings, showcasing a strong work ethic, adaptability, and a commitment to ongoing professional development in the dynamic field of pharmacy.

Amit Kumar

Amit Kumar is an accomplished professional in the field of pharmacy, holding a B.Pharmacy, M. Pharmacy, and had submitted his Ph.D. Currently serving as the Associate Professor and Head of the Pharmacy Practice Department at the NAAC A accredited Aditya College of Pharmacy in Surampalem. He has demonstrated his commitment to advancing pharmaceutical knowledge through his extensive publication record, with 33 articles published in various reputed Indian and international journals. His research contributions span a range of topics within the pharmaceutical domain, showcasing his expertise and dedication to the field