EFFECTS OF AMINOLOBAN ON CONSCIOUSNESS LEVEL IN PATIENTS WITH HEPATIC ENCEPHALOPATHY SECONDARY TO CHRONIC LIVER DISEASE

Ijaz Mohammad Khan, Khalid Hameed, Sajjad Ahmad, Abbas Khan, Fazle Akbar

Department of Gastroenterology,
Postgraduate Medical Institute,
Lady Reading Hospital, Peshawar.

ABSTRACT

Objective: The effects of aminoloban a mixture of branched-chain amino acids was evaluated on the degree of consciousness level in patients with hepatic encephalopathy.

Material and Methods: Fischer’s formula of high concentration of branched-chain amino acids and low concentration of aromatic amino acids was used (Aminoloban), in a dose of one bottle BD at 30 drops per minute. A total number of eight patients with liver cirrhosis and encephalopathy were evaluated and the degree of consciousness after aminoloban infusion was recorded.

Results: It was found to be ineffective in four, effective in two, and slightly effective in two.

Conclusion: A large number of patients need to be studied prospectively to see the effects of aminoloban on consciousness level in patients with hepatic encephalopathy secondary to cirrhosis of the liver.

Key words: Aminoloban, Hepatic encephalopathy, Chronic liver disease.

INTRODUCTION

It is well known that protein intolerance is the greatest problem when a high protein diet is given to cirrhotic patients, particularly in the decompensated stage, and thus dietary protein is usually restricted to less than 40 gm per day.

In 1971 Condon reported the importance of dietary factors (quality of protein) with
regard to development of hepatic encephalopathy and survival rate in Eck dogs, "milk" diet was superior to "fish and meat" diets.

It was also disclosed that the concentration of BCAA of milk diet was more than AAA, exhibiting a higher molar ratio of BCAA to AAA such as 4.8. this prompted Fischer's group to investigate plasma amino acid imbalance in hepatic encephalopathy, and consequently devised a special amino acid solution enriched with BCAA (or Fisher's solution) for the treatment of hepatic encephalopathy.

The branched-chain acid preparation used to treat patients with liver failure have been evaluated in prospective, randomized trials with regard to their nutritional effects, arousal effects form hepatic encephalopathy, and their effect on cumulative survival. These branched-chain amino acids regulate protein synthesis, detoxify ammonia in the brain and skeletal muscles, and stimulate the immune system. When administered they cross the blood brain barrier and enter the brain to produce psychotropic effects. Rossle et al. reported a rapid reduction in CSF ammonia concentration after administration of a branched-chain amino acid preparation to cirrhotic patients with encephalopathy.

**MATERIALS AND METHODS**

In the department of Gastroenterology at PGMI/HMC Peshawar the effects of Aminoleban, (a branched chain aminoacid), were evaluated on the degree of consciousness level, in patients with chronic liver disease.

Fischer's formula of aminoacid containing high concentration of branched-chain aminoacid and low concentration of phenylalanine, tryptophan and methionine without tyrosine was used in the shape of aminoleban.

Aminoleban is a colorless and clear solution used of IV injection in a dose of 500 to 1000 ml per dose, infused via a vein. The infusion rate is 500 ml over 180 to 300 minutes (about 25 to 40 drops per minute).

Prospectively eight consecutive patients were enrolled in the study. The information was collected on a prestructured questionnaire.

**Inclusion Criteria:**

1. Hepatic encephalopathy secondary to chronic liver disease(cirrhosis).
2. Age 18 years or older.

**Exclusion Criteria:**

1. Patients with severe renal disorder.
2. Patients with abnormal amino acids metabolism.

A detailed history was obtained regarding the cause, duration and complications of cirrhosis like jaundice or ascites.

Also history regarding hepatic encephalopathy like initial or recurrent episode and precipitating causes like infection, constipation, drugs, variceal hemorrhage, electrolyte imbalance was obtained.

Grading of coma level, A,B,C, and consciousness level were also assessed on admission.

Lab profile (urea and creatinine) and medication history were also obtained.

Then Aminoleban in a dose of one bottle bd was given at 30 drops per minute for one to three days.

The consciousness level was assessed at start of infusion, at 3 hours, at end of infusion and at 24, 48, and 72 hours.

Adverse effects and overall effectiveness (Remarkably effective, Effective, Slightly
effective, or Unchanged) of aminoleban were also noted.

Total of eight patients (four males and four females) were enrolled with an age ranging from 38 to 70 years.

The cause of cirrhosis was viral (B or C) in most cases.

Duration of cirrhosis was ranging from 1 to 5 years.

Seven out of eight patients had jaundice and ascites while one had ascites only. One out of eight had an initial episode of encephalopathy otherwise all others had recurrent episodes.

Six out of eight had infection and two had hemorrhage as the precipitating cause. All had child’s C cirrhosis. Urea and creatinine were normal in all except one. Almost all were on standard treatment of cirrhosis. Duration of Aminoleban treatment was three days in all except one.

RESULTS

The overall effectiveness of Aminoleban in terms of consciousness level was recorded.

It was found to be ineffective in four of the eight patients studied. The cause of cirrhosis in this category was hepatitis and liver failure due to HCV in three, and in one the cause could not be determined. All these patients had history of recurrent encephalopathy. The precipitating cause of encephalopathy was infection in two and bleeding in two. All four had complications of cirrhosis like ascites and jaundice. The renal function was normal in three out of four patients.

The results were slightly effective in two out of eight patients. In both these patients the cause of cirrhosis was chronic hepatitis. Both had complications like jaundice and ascites and in both renal function was normal. One patient had initial episode while the other had history of recurrent encephalopathy. The precipitating cause of encephalopathy was infection in both.

Aminoleban was found to be effective in two out of eight patients. In this category the cause of cirrhosis was chronic hepatitis in one and in the other the cause could not be determined. Both had recurrent episodes of PSE and in both the precipitating cause was infection.

The results were good in those patients who came in with PSE secondary to SBP and not in those who came in with Gastrointestinal bleeding.

No side effects of Aminoleban were recorded.

DISCUSSION

Hepatic encephalopathy has been related to excess ammonia, short chain fatty acids and mercaptans. Recently the importance of other factors has been evaluated such as disturbance of free aminoacid pattern in plasma characterized by an increase of phenylalanine, tryptophan, tyrosine and methionine and a decrease of branch-chain aminoacid such as leucine, isoleucine and valine.

Patients with severe liver disease are apparently unable to utilize some essential aminoacids creating an imbalance, which causes disturbances in the transport of aminoacids across the blood-brain barrier thereby increasing synthesis of false neurotransmitters in the brain, resulting the disturbance of overall cerebral amine metabolism which is thought to be the major cause of hepatic encephalopathy. Normalization of plasma aminoacid pattern may enable a more beneficial balance of aminoacid as they enter the brain with efficient synthesis of neurotransmitter like norepi-
nephrine and dopamine with improvement of hepatic encephalopathy.

It has been well established that the plasma amino acids imbalance, representing a decrease in branched chain amino acids (BCAA) and increase in aromatic amino acids (AAA), exists in the majority of cirrhotic patients. Furthermore Holm et al disclosed that clearance rate of BCAA in cirrhotic patients was significantly greater than in healthy subjects. The mechanism of development of plasma amino acid imbalance, particularly of decreased BCCA, still remains unclariified. A hypothesis that insulin and glucagon may play a crucial role, has not been proven by clinical investigation.

Normalization of plasma aminoacid pattern may enable a more beneficial balance of aminoacid as they enter the brain with efficient synthesis of neurotransmitter like norepinephrine and dopamine with improvement of hepatic encephalopathy, although several controlled trials do not support the efficacy.

Recently two studies to evaluate the effects of plasma amino acid imbalance and long term oral supplement with BCAA-G (Branched chain amino acid granules) on the prognosis of cirrhotic patients, with regard to cumulative survival rate calculated by Kaplan-Meir method.

We felt that a large number of patients need to be studied prospectively to see the effects of aminoacibon consciousness level in patients with hepatic encephalopathy secondary to cirrhosis of the liver.

REFERENCES


Address for Correspondence:
Dr. Ijaz Muhammad Khan,
Department of Gastroenterology,
PGMI/LRH,
Peshawar.