EVALUATION OF AMINO ACID (ALAMIN-SN) IN BURNS

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KEY WORDS
Nitrogen Balance.

ABSTRACT

20 patients of burns in the control group and 20 in the ALAMIN group were enrolled in this open labelled clinical trial to determine the effect of amino acid infusion on selected parameters.

It is observed that patients given 2 bottles a day of ALAMIN-SN for a period of 20 days (which provides 6.08 grams Nitrogen and 20.32 grams of protein per day) show significant improvement in Haemoglobin levels, Serum Albumin and reduction in Burn areas. There is statistically significant improvement in the nitrogen balance in patients administered ALAMIN-SN.

INTRODUCTION

Patients who suffer from burn injury, often are in a negative nitrogen balance, which delays recovery and hampers tissue healing. Such patients require restoration to a state of positive nitrogen
balance for survival, either by natural course (if the injury is less) or by some adjuvant therapy.

**MATERIAL AND METHODS**

1. Evaluation of the degree of nitrogen balance
2. To compare
   a) conventional diet/therapy
   b) when supplemented with amino acid (ALAMIN-SN)

The following patients were included in the study:

1. Patients between the ages of 20 and 40 years.
2. Patients with 25-40% burns.
3. Patients who could be followed up for a minimum period of 21 days.

The following patients were excluded:

1. Patients with hepatic/renal dysfunction
2. Patients with cardiac/psychiatric disorders
3. Patients of tuberculosis/septicemia/nutritional disorders.

**SAMPLE SIZE**

Total number of 40 patients were enrolled in the study.

**PATIENT GROUPS**

The enrolled patients were divided into two equal groups:

1. 20 patients received conventional treatment (hospital diet) and 2 bottles of 10% Dextrose daily.
2. 20 patients received conventional treatment plus 2 bottles of ALAMIN-SN and 2 bottles of 10% Dextrose daily.

Both groups received protocol treatment for periods varying from 21 to 28 days.

**TREATMENT**

Patients in the conventional therapy group received an oral diet consisting of:

- Protein: 55 grams
- Carbohydrate: 300 grams
- Fats: 10 grams
- 10% dextrose 2 bottles (1080 cc) daily.

Blood transfusion was administered in cases where the Hb% was 8 gm%.

In most of the cases oral therapy was initiated after about 48 hours after burn injury when the period of hemoconcentration was over and normal kidney function established and when there was no evidence of gastrointestinal disturbances.

In addition, patients received adequate water, minerals and vitamins.

Patients in the ALAMIN-SN group received the same treatment as above except that they received in addition 2 bottles of ALLAMIN-SN every day.

**EVALUATION**

Clinical evaluation consisted of daily study of vital functions, body weight, oedema, jaundice and size of ulcer.

The other evaluation parameters used were:

1. 24 hours Urinary Nitrogen output
2. Quality of epithelisation through clinical measurement and photographs.
3. Intake output record.

**LABORATORY EXAMINATION**

The following laboratory examinations were conducted:

Haemogram, SGOT, SGPT, Prealbumin levels on days 3, 5, 10, 15 and 20.
BUN, Creatinine, Albumin, Globulin and 24 hour Urinary Nitrogen output on day, 3,5,7,8,9,10,12,14,15,18,20,24 and 28.

RESULTS

20 patients were enrolled in each treatment group.

All patients were matched for age, sex, percentage of burns, body weight and haematological and biochemical parameters.

There was no significant difference in serum Creatinine, BUN, SGOT, SGPT values in the two groups before and after protocol therapy.

Statistically significant differences were found in the patients receiving ALAMIN-SN (2 bottles/day for 20 days) in the following parameters:

1. Haemoglobin
2. Albumin levels
3. Ulcer size

The rise in haemoglobin level in the ALAMIN-SN group before and after therapy is statistically significant. Likewise, the fall in the Haemoglobin level in the control group before and after treatment is also statistically significant. The difference in the haemoglobin levels between the two groups at the end of protocol therapy is statistically highly significant (p, 0.01).

| HAEMOGLOBIN |
|---|---|---|---|
| GROUP | Gm% INITIAL | FINAL | SIG |
| ALAMIN | 10.15 | 12.85 | p 0.05 |
| CONTROL | 11.92 | 9.95 | p 0.05 |

| SERUM ALBUMIN LEVELS |
|---|---|---|---|
| GROUP | Gm% INITIAL | FINAL | SIG |
| ALAMIN | 2.85 | 3.4 | p 0.05 |
| CONTROL | 3.19 | 2.72 | p 0.05 |

It is observed that although the patients in the ALAMIN-SN group had initially lower albumin levels than the control group, the rise in serum albumin values in the ALAMIN-SN group at the end of 20 days therapy is statistically significant (p 0.05). On the other hand, patients in the control group who had higher albumin values initially had statistically significant lower values at the end of the protocol therapy. The difference in albumin values between the ALAMIN-SN group and the control group was statistically highly significant at the end of 20 days treatment (p 0.01).

PREALBUMIN VALUES

The prealbumin values did not reflect the serum albumin levels in this study. The mean prealbumin values in the control group was 0.05 mg% initially and 0.09 mg% at the end of the study and, 0.09 mg% and 1.1 mg% in the ALAMIN group. The average values of prealbumin in normal age matched healthy Indian individuals is 18 mg%. This is significantly less than the reported average prealbumin values of 30 mg% in western population.

| REDUCTION IN ULCER AREA |
|---|---|---|---|
| GROUP | INITIAL | FINAL | SIG |
| ALAMIN | 33.5 | 11.75 | p 0.001 |
| CONTROL | 25.9 | 15.4 | p 0.05 |

The reduction in ulcer area in both groups was statistically significant, it was highly significant in
the ALAMIN-SN Group favouring once again, ALAMIN-SN group.

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<th>MEAN 24 HR. URINARY INTROGEN OUTPUT FROM DAY 3-20 GM</th>
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24 hours urinary introgren output is statistically significantly less in the ALAMIN-SN group as compared to the control group on days 5, 7, 8, 9 and 10, while it is statistically significantly less in the control group on day 20.

**NITROGEN BALANCE**

**CONTROL GROUP**

The mean daily nitrogen intake in the control group was 8.8 gms and 24 hours urinary nitrogen output ranged from 11.4 to 13.1 gms. The nitrogen balance in the control group was negative and varied from 2.6 to 4.3 gms per day.

**ALAMIN GROUP**

The mean daily nitrogen intake in the ALAMIN group was 14.88 gms and 24 hours urinary nitrogen output ranged from 10.2 to 12.8 +gms. The nitrogen balance in the ALAMIN group was therefore always positive and varied from 4.6 to 2.0 gms per day for first 40 days. This is statistically significant (p 0.05).

**CONCLUSION**

It can be concluded that in initial high catabolic state of burns a positive nitrogen balance with all its attendant advantages of accelerated healing, improved haematological status and increased well being was achieved by Alamin group of patients.

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