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Observation on the Anabolic Effects of Liv.52 in Burns

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Burn trauma continues to baffle clinicians and research workers alike. With improved understanding of the pathology of burn shock, death in the first few days from hypovolaemic shock has decreased considerably; but the intricate and complicated metabolic derangements which occur after thermal trauma, still pose a challenge to all those who are interested in this field. Toxaemia, infection, prolonged morbidity have all played and continue to play a decisive role in delayed mortality of burns.

It is an established fact that burns, trauma, surgery, infection or mere inactivity in a patient confined to bed, for as little as 48 hours, result in a negative nitrogen balance, as a result of protein catabolism. This has been demonstrated by an increased excretion of urinary nitrogen after trauma, which persisted according to the severity of trauma. This catabolism changed into that of anabolism leading to a gradual positive nitrogen balance, once the patient became ambulatory (Taubenhans, 1950). In burns, all the above-mentioned factors (injury, infection, prolonged immobilisation) contribute to a prolonged state of negative nitrogen balance, at times continuing for up to 10 weeks. Until recent times this "post-traumatic protein breakdown" was considered as obligatory.

Anabolic steroids, in recent times have been shown to inhibit this protein breakdown, thereby converting a negative nitrogen balance, into a positive one. This resulted, in the appearance of many steroids, both naturally occurring ones and synthetic ones, each claiming beneficiary effects on this tissue breakdown. But many of these steroids, especially the hormones, in addition to their anabolic effects manifested undesirable masculinizing effects in females.

Liv.52 is herbal product (The Himalaya Drug Company Private Ltd.) claiming all the beneficiary effects of anabolic steroids, without side effects. Since the majority of the burn accidents, in this part of the country, occur in females, it was considered worthwhile to undertake a study on the effects of this drug in burn patients.

METHOD AND MATERIALS

The study was carried out in 50 acutely burnt patients admitted to the Plastic Surgery Department of Patna Medical College Hospitals.

These patients were divided into two groups – a control group of 20 patients and treated group of 30 patients. The control group received the routine treatment; whereas in the treated group, in addition to the routine treatment, Liv.52 as an additional therapy was instituted. The dosage schedule of the drug was as follows:

Two tablets three times daily in adult patients.

Children below 6 years received Liv.52 drops; 5-10 drops three times a day, according to age.

The treatment was started immediately after the patients recovered from burn shock, which was usually after 48-72 hours. Patients were observed for the return of appetite for a period of 8 weeks. The following investigations were carried out before institution of treatment schedule, and at weekly intervals thereafter till the end of eight weeks:

Urinary nitrogen (this was not carried out in the first few days as the urine output in some cases fluctuated widely) plasma protein, SGOT and A/G ratio. A comparative study on epithelialisation of superficial burn wound, and 'take of skin graft' in deep burns was undertaken in the control and treated groups.

OBSERVATIONS AND DISCUSSION

Return of appetite was found to be a definite prognostic index in evaluating the efficacy of this therapy. "An increase in appetite appeared to be the most striking and uniformly produced effect of anabolic agents and was generally accompanied by weight gain, and less constantly, by a feeling of increased strength" (Payne, 1959).

In the present study, 63 per cent of patients in the treated group regained their appetite by the 5th to 8th post-burn day. The remaining 37 per cent, which did not show such a favourable result were patients with extensive burns, poor nutritional status or with burn wounds badly infected. From this it is evident, that in most cases, traumatic protein breakdown is not merely related to the nature of injury, but other complicating factors may also have an influence on it.

In the control group, only two patients (10 percent) regained their normal appetite by the 5th post-burn day. These two cases had only 8 per cent and 18 per cent of their body surface burnt. The observations are tabulated in Table 1.

Table 1: Showing appetite improvement in weeks

No. of cases	% of burnt area	1st week	2nd week	3rd week	4th week	5th week	7th week	7th week	8th week	Results
Control Group										
1	8%	Good	Good	Good	Good	Good	–	–	–	Cured
1	18%	Poor	Good	Good	Good	Good	Good	–	–	Cured
9	12-35%	Poor	Poor	Good	Good	Good	Good	Good	Good	Cured
1	32%	Poor	Poor	Poor	Good	Good	Good	Good	Good	Cured
3	25-30%	Poor	Poor	Poor	Good	Good	Poor	Poor	Poor	Died
5	32-40%	Poor	Poor	Poor	–	–	–	–	–	Died
Treated group										
1	12%	Good	Good	Good	Good	–	–	–	–	Cured
18	8-35%	Poor	Good	Good	Good	Good	Good	Good	Good	Cured
1	35%	Poor	Poor	Poor	Good	Good	Poor	Poor	Poor	Died
3	30-38%	Poor	Good	Poor	–	–	–	–	–	Died
2	30-35%	Poor	Poor	Poor	Good	Poor	Poor	Poor	Poor	Died
5	30-40%	Poor	Poor	Poor	–	–	–	–	–	Died
Control group – 55% patients regained appetite by 3rd week. Treated group – 63% patients regained appetite by 2nd week.										

There are reasons to say that the increase in appetite leading to better intake of food is the "primary decisive factor for the ultimate prognosis of the severely burnt patients, as seen by the fact that all the patients of the treated group who regained the appetite and maintained it, showed an all-round improvement and soon got cured." The beneficial effects of anabolic agents on appetite has been reported by a number of workers (Dolececk, 1962; Kalina, 1962).

Effects on Urinary Nitrogen

The turnover of protein can be determined fairly easily in terms of nitrogen balance, for nitrogen content of urine accounts for about 9/10 of the protein broken down in the body. "It can be assumed that any protein broken down in excess of the food intake must be derived from the patient's tissues." (Jamieson, 1969).

The present study also confirmed the fact that, estimation of urinary nitrogen is a reliable index indicating protein metabolism. The excretion of urinary nitrogen after burn injury was found to be considerably

elevated in spite of the fact that, proteins continue to leak through the burned surfaces. "After an extensive burn the urinary loss alone may exceed the dietary intake by the patient by 30 g/day and there are additional large losses of nitrogen in the exudate from burnt area which may continue for several weeks" (Jamieson, 1969). By increasing the appetite and thereby the intake of food, the intake of protein and other body building food is indirectly assured.

In patients treated with Liv.52, the urinary nitrogen returned to normal level much earlier, when compared with the control group; 63 per cent in the treated group showed normal urine nitrogen excretion by the beginning of the 1st week. Most of these patients had burns involving 35 per cent of the body surface. In the control group, only 25 per cent of patients had normal value of urinary nitrogen excretion in spite of the fact that in many of them far less body area was involved in the burn. This action of Liv.52 is a direct one on protein metabolism and not through its beneficiary action on appetite, since after moderate or severe trauma increasing the protein intake without the use of anabolic steroids merely increases the nitrogen loss, the balance remaining constantly negative (Jamieson, 1969). The values obtained are tabulated in Table 2.

Table 2: Showing weekly urine nitrogen excretion in control and treated groups

No. of cases	% of burnt area	1st week	2nd week	3rd week	4th week	5th week	7th week	7th week	8th week	Results
Control Group										
3	8-12%	–	High	Normal	Normal	Normal	Normal	–	–	Cured
2	15-18%	–	High	High	Normal	Normal	Normal	–	–	Cured
3	20-22%	–	High	High	High	Normal	Normal	Normal	Normal	Cured
3	25-32%	–	High	High	High	High	High	Normal	Normal	Cured
1	35%	–	High	High	High	High	High	High	Normal	Cured
5	32-40%	–	High	High	–	–	–	–	–	Died
3	25-30%	–	High	High	High	High	High	High	High	Died
Treated group										
3	8-12%	–	High	Normal	Normal	Normal	Normal	Normal	Normal	Cured
16	12-35%	–	High	High	Normal	Normal	Normal	Normal	Normal	Cured
8	30-40%	–	High	High	–	–	–	–	–	Died
3	30-35%	–	High	High	High	High	High	High	High	Died

Control group – 25% of the patients showed normal urine nitrogen excretion by 4th week. By 7th week 55% of the patients showed normal urine nitrogen excretion

Treated group – 63% of the patients showed normal urine nitrogen excretion by 4th week.

Effect on Plasma Proteins, A/G Ratio

After burns there was a fall in the level of plasma proteins, which was gradual and sustained. In the treated group, the fall was minimal and in many cases by the 5th week it started returning to normalcy. A/G ratio was not found to be disturbed much.

SGOT level (Normal 4-50) showed a considerable increase in the post-burn period, depending upon the severity of burn wound. It was observed that all these investigations indicated improvement, which was closely related to the regaining of the appetite. It may be concluded that all these are secondary to the return of appetite and increased intake of food.

In the control group, 10 patients had their deep burn grafted. Good take was noticed in 50 per cent of the patients. In the other half, the procedure had to be repeated. The two cases of superficial burn took 4-4½ weeks' time for complete epithelialisation.

In the treated group, 14 patients underwent grafting procedure. In 9 (64%) the take was good and in the remaining 5 (36%) the grafting had to be repeated.

There were five cases with superficial burns only and they took only 2-2½ weeks for complete epithelialisation. This finding is of great interest to surgeons for whom re-surfacing of burn wounds in the presence of infection and hypoproteinaemia is a problem riddled with great difficulties.

Summary and Conclusions

The study was carried out in 50 burn patients, admitted in the Plastic Surgery Department of the Patna Medical College Hospitals. They were divided into two groups; one in which the patients received Liv.52 tablets or drops (in children) in a dosage of 2 tablets or 5 to 10 drops three times daily, in addition to the routine therapy. Thirty were included in this group; and there was a control group of 20 patients in whom routine therapy was the same but this drug was not given.

All the patients tolerated this drug well, and there was not a single case of any undesirable side reaction.

A definite improvement in appetite was observed in 63% of the treated group within 5-8 days. In the control group, only 10% of the patients regained their appetite within this time. This improved appetite led to better food intake and a general sense of well-being.

Reduction of the urine nitrogen values was observed within 5-8 weeks in a majority of patients in the treated group. In the control group, only 25% reached normal values within this time. Most of them took as long as 10-11 weeks to attain normalcy. Raising of plasma protein to the pre-burn values, restoration of the A/G ratio to normal and reduction in SGOT values were the other things observed in the drug-treated group. Whether this is a direct action of Liv.52 or through its beneficial effects on appetite, is debatable. From the effect of Liv.52 on regeneration of liver cells in cases of Infective Hepatitis, it can be safely assumed that Liv.52 has beneficial effects also on injured liver cells in burns also, and this could explain the increased appetite, weight and sense of well-being.

None of the female patients exhibited any masculinizing tendency even after prolonged therapy.

Earlier epithelialisation of superficial burns and the "take" of skin graft in deep burns were definitely found to be better in the group receiving Liv.52 when compared to the control group. These beneficial effects indirectly reduced the infection rate of the burnt area, thereby curtailing the number of days of hospitalisation.

Liv.52 was however found to have no effect on burn toxaemia and the resulting mortality from it.

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