

Serum Protein Levels Following Amniotic Membrane Application In Burns.

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KEY WORDS

Biological dressing, Serum Protein.

ABSTRACT

Fifty patients in 18 months were subjected to this study. On second and on fifteenth day serum protein levels were studied. Both groups under study gave raised levels. Control group where burn surfaces were treated by antimicrobial cream showed 3 % rise and those treated with amniotic membrane gave 11 % rise in serum protein levels.

INTRODUCTION

Immediate post burn phase is characterized by a marked and dramatic increase in the permeability of the capillaries. They become permeable to electrolytes and colloids. This increased capillary permeability occur through the vascular system. It is however, more marked and immediate in the burn surfaces. Extravasated fluid has a protein content of approximately 3 mg/ 100ml. Biological dressings by providing a cover to the burn wounds, reduce the loss of protein, heat and water loss to a remarkable degree.

MATERIAL AND METHODS

Fifty patients of burn irrespective of age and sex were taken up for this study. Out of these, forty were of thermal burns, six were electrical and four due to chemicals. Besides other necessary investigations total serum proteins, s. Albumin and S. Globulin levels were assessed on 2nd day and thereafter weekly.

Thorough debridement was done in all the patients to prepare the surface for application of biological dressing. Thereafter Amniotic membrane was applied as a biological dressing in the study group and topical cream with swabs in the control group.

RESULTS
Table No.1
Average levels of Serum proteins

	2nd day Mean levels	15th day Mean level	Mean rise
Amniotic Membrane	6.23	6.92	11 %
Control	5.38	5.54	3 %

From the above table, it is evident that there is a significant difference in the rise of total serum proteins in (Study group) compared to (Control Group).

Table No. 2 : Average levels of Serum albumin.

	2nd day Mean	15th day Mean
Amniotic membrane	3.67	4.39
Control	3.76	2.74

From the above table, it is clear that there is a marked increase of Serum albumin levels in those where amniotic membrane was applied and none in group where antimicrobial cream was used.

Table No. 3 : Average levels of Serum Globulin :

	2nd day Mean	15th day Mean
Amniotic membrane	1.50	1.78
Control	1.62	2.80

Above study shows Serum globulin levels increase in both groups and 25 % more in patients who have antimicrobial topical dressing alone.

DISCUSSION

Davis (1910) first reported use of fetal membrane in skin transplantation. Stern and Sabella (1913) treated and independently reported the use of 'amniotic membranes' on burned and ulcerated skin.

Hensen (1950) used amniotic grafts in chronic skin ulcers on the legs in elderly people.

Trelford et al (1973) reported the use of amnion alone in full thickness wounds as a biological dressing. Reduced pain and fluid loss and a fifty percent reduction in infection, resulted in fewer days of hospital stay in their study.

Colocho et al (1974) used amniotic membranes for split thickness skin donor sites.

The amniotic membrane was reported as an accepted and established treatment in burns by Ninman and Shoemaker (1975). Unger and Roberts (1976) felt that the use of lyophilised amniotic membranes would be an advantage over the viable forms, as they are easy to prepare, store and transport at room temperature and do not require antibiotics for sterilization.

Similarly, in another study, the amnion was used for thermal injury as a biologic dressing by Bose, B. (1979). The membrane, as he observed, is found to prevent heat and water loss from the wound surface and acts as a barrier against bacterial contamination thus aiding the healing process and hence reducing the morbidity. Like many other studies, he also noticed marked relief of pain after applying the membrane to the raw area.

Successful temporary protection of burns with amniotic membranes was reported by Walker and his colleagues (1980), in more than hundred burns patients, mostly children.

In recent study conducted by Sinha, R.C. and Sinha, B.B. (1982) the use of amnion over various types of wounds, as a biologic dressing was studied. They observed that the membrane usually survived upto five days on deep wounds or severely infected wounds after which it had to be replaced. The healing took place from the margins and that application of membrane reduces pain substantially, reduces evaporative losses of fluids and reduces exudative losses of proteins from burn surfaces.

CONCLUSION

On three counts this study has proved valuable. Firstly it shows that in both groups there is rise in total protein levels, between the 2nd and the 15th day, and this is significantly more in cases where amniotic membrane is used. Secondly, albumin levels show dramatic rise in subjects where amniotic membrane is used and none in control group. Thirdly, a rise in globulin level is noticed in both groups. However, it is more in patients who do not have amniotic membrane cover to burn surfaces.

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