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Case Study

Dietary Management of 35% Burn Patient in a Tertiary Care Hospital

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Abstract

Introduction: Burn injury is a highly preventable, significant health issue that could lead to disability and disfigurement for the whole life. These are mostly found in low as well as middle income countries like India. Notwithstanding, there are deficient information accessible with regards to the burden of burn injuries, and its financial.

Materials and Methods: This study was undertaken at a private multispecialty tertiary care hospital hospital, IMS and SUM Hospital, Bhubaneswar, Odisha. The medical data of burns patients who admitted to our hospital plastic surgery department, from February to March 2019 were included in this study and also daily progress of the patient was monitored till recovery or discharge.

Results: During the period of observation it was found that the 35% burn might be fatal unless proper medical care is provided. A pivotal analysis also revealed that a major diet modification and the strict implementation of the dietary guideline was the key factor for speedy recovery along with medication and other aids.

Conclusion: For the quick recovery of the patients, nutritional support in individual lebel may observed. More investigations is the altimate way to get the precise knowledge regarding the optimal and accurate nutrition for the burn patients.

Keywords: 35% TBSA; Total Body Surface Area Burn; Nutrition; Dietary Management; Critical Care

Introduction

In a year, 265K people are dying globally in the case of burning. More than 1 million individuals are found burnt in both seriously as well as moderately each year in India [1]. It is assessed that every year due to burn injury 10 million people became disable or losing their life globally [2,3]. As we discussed mostly the cases were associated with developing countries like India. burning is the major cause of disability and deformation. Worldwide burn is found as very general and unique cause of suicide and homicide [4].

The injury cause by the burn is the highest rank in severe type of injury that leads to more case of mortality as well as morbidity. the cause may differ like scalds, heat, open fire radiation, electricity etc. The burn problems are multi-factonal can result in disabilities, disfigurement, psychosocial problems, comprising death and stigma etc. [5-8]. Taking those problems in to account our objectives is to assess the impact of dietary modification on a burn patient, Analyze the response of XY patient aligned with recovery and the role of diet in it and to reinforce, "The Diet" aggravates the process of healing improve the chance of recovery.

The profundity of burn injury alludes to the measure of skin and on certain events other tissue, harm or annihilated. Skin has two layers, the shallow epidermis and the more profound dermis that over lies subcutaneous tissue. Consumes are delegated shallow

first Degree, Partial Thickness (second degree and Full Thickness third degree relying upon low profound and serious they infiltrate the skins surface.

Case Study

A 35 year Female admitted in Ims and Sum hospital with 35% tbsa flame burn. Patient sustained burn injury from domestic accident fire and he was admitted in a fully conscious. Her B.P at that time was 110/70. According to the height and weight his BMI was 32.5/kg m^2. She is having hypothyroidism since last 10 years and hypertension since 4 years with medication. Her abdominal area was severely affected which is leads to 2^{nd} degree deep burn. According to the Microbiological investigation no organism could be grown on culture after 48 hours of aerobic incubation. Biochemical report showed Hb down 8.3gm/dl. The patient needed the correction of anaemia blood transfuse 1 prbc (packed red blood cell).

A lactose free formula with a high protein content can be selected. For burn patient body weight is the most important parameter which is adequacy of nutritional status support can be seen in the increasing body weight firstly patient was in 35% burnt, due to diet and medicine prescribed almost 60% of burn seemed to be recovered. The patient gradually became active and was able to talk. The pain got reduced and the patient response was good. She ate the food as medicine and also that help her to recovery so early. When patient was discharged she was able to eat normal high protein diet.

Due to the hyper metabolic and hyper catabolic state, there is an increased need of calories There is also loss of protein and fluid from burn area due to oozing and evaporation. So, the goal of treatment would be to provide aggressive nutritional support for wound healing, reducing infection, preserving body store for replacing protein to promote wound healing.

Dietary management

Nourishing help addresses one of the main foundations in the administration of patients with a moderate to extreme burn injury.

The Patients having 20% or more burn over their body surfaces have need of unique diets during healing process. Such serious Burn altogether supports the rate at which bodies process supplements, making a danger of lack of healthy sustenance.

Among the vital nourishing contemplations for serious burn casualties are expanded protein and unhealthy weight control plans. Burn injuries as body frameworks endeavor to recovers skin and muscle tissues. Furthermore, additional sugars and fat in burn casualty's weight control plans keep energy levels high-a vital fixings to recuperation. Burn injury online notes serious consume casualties frequently need to an additional two servings of protein each day through lean meat, fish or dairy. Furthermore, devouring additional sugars keeps sufficient body fuel ready, diverting proteins to the course of skin and tissue fix. Fat additionally gives required calories to powering the assortments of burn casualties. Specialists frequently suggest that consume patients with 30% of their calories from fat.

The energy consumption in burn surpasses that of some other injury. Oxygen utilization increments and tops by day 10 post consume to 2.5 occasions that of the ordinary. The caloric requirements are assessed generally on premise of following equation - 25 kcal/kg body weight +40 kcal x % body consumes.

Calories necessities top some place in the scope of 6th and tenth post devour day and reduction to standard levels with complete skin incorporation. Denying antagonistically influences wound recovering, immunocompetence and mortality. Over dealing with causes hyperglycemia, oily livers and raised CO_2 creation. Patient should be kept warm and alleviation from inconvenience gave.

Protein

Need for Protein is the most significant by the a consume injury patients - Protein needs can be by utilizing the recipe 1g/kg body wt+3g x % body consumes The protein source should improve the course of twisted be of high natural value 11. Arginine rich food further develops cell intervened resistance and mending. Nitrogen is another parameter that is useful for estimating sufficiency of protein ingestion in burns patient, calculation formula is Nitrogen intake = 24 hour urine urea nitrogen + fecal nitrogen loss g/24 hours + wound nitrogen loss g/24hours.

Loss of nitrogen from the surface of burn in calculated as -

- <10% open wound = 0.02g nitrogen/kg/day.
- 11% to 30% open wound = 0.05 g nitrogen/kg/day.
- Less than 30% open wound = 0.12 g nitrogen/kg/day.

As there is continuous loss of potassium due to oozing from wound. Patient requires potassium complement. The Potassium to nitrogen ratio must be 6:1 until the phase of late convalescent [12].

Carbohydrates

The wound utilizes huge amounts of glucose to lactic acid production. Hyperglycemia is normal during the intense period of burn patients. Glucose ought to be observed and controlled utilizing exogenous insulin carbs are gainful as healthy substrates

and help in use of protein. Anyway exorbitant sugar consumption causes incidental effects.

Fats

Traditionalist ingestion of fats is valuable. Giving 15-20% of non protein calories as fats are ideal supplementation is significant. Advancement with nutrients An and C and zinc is likewise essential. 5000 IU of Vit A for each 1000 kcal helps in epithelilization and support of immunologic reaction. Vit C is significant in collagen combination and resistant capacity and needed in builds measure of wound, its typical dosages 500mg two times every day. Ingestion of 1gram of Vit C is likewise vital. Supplementation with 220 mg of zinc sulfate day by day is suggested. Organization of calcium to treat hypocalcemia, and supplemental magnesium and phosphorous are given to forestall gastrointestinal aggravation [13].

Patients with burn of <-20% of body surface region can be given oral food. Enteral taking care of ought to be begun as ahead of schedule as could really be expected. A lactose free formula with a high protein content can be chosen. For burn patients, body weight is the main boundary that guides diets/nutritional help. The sufficiency of nourishing help can be found in the expanding body weight [14] content can be chosen. For burn patient body weight is the main boundary which is ampleness of nourishing status backing can be found in the expanding body weight [15].

Types of diet

High calorie protein, fibre rich with vitamin E diet

- Energy- 2500kcal
- Carbohydrate- 300gm
- Protein- 2 gm/kg/body weight (about 96gm)
- Fat- 38gm
- Fibre- 40 gm
- Early Morning (7am)- Id- soaked almonds 4-5 no. s and water/misri and isabgol water.
- Breakfast (8-9am)- Coconut or chana chutney, sambar or matar curry/chakuli, chana curry/dalia vegetables upma, mint chutney/Spinach or methi or carrot paratha and curd [10].
- Mid-Morning (11am)- Coconut water/Vegetable soup/Fruit Salad includes apple, pomegranate, guava,ripe papaya/badam or banana milk shake
- Lunch (12-1pm)- Parboiled rice, dal, paneer curry/egg white curry/Fish curry, Parwar fry/bhindi/raw plantain/soyabean, curd salad.
- Snacks(4-5pm)- Vegetable soup/bread omelette/egg poach/sprouted green gram salad/corn salad
- Dinner (8-9pm)- Chapati, dalma/rajmah/cow pea curry,bhindi/bean/brinjal fry
- Post-Dinner- Haldi milk.

4 Scoop of Resource high protein added to the menu 2 times per day.

Parameters	Dates								Normal Range
	25/2	27/2	28/2	1/3	4/3	8/3	16/3	21/3	
Haemoglobin	12.7	10.6		9.9	8.3	11.4	11.9	13.9	12-15gm/dl
Total rbc count	5.73	4.81		4.58	3.84	4.96	5.11	5.0	4.5-5.9 10^6/ul
TWBC	19.42	10.54		11	18.27	13.78	16.32	11.0	4-10 10^3/ul
Platelet count	302	231		288	376	568	499	384	150-400 10^3i/l
S-sodium	138	128	126	125		130	134	131	135-155mEq/l
S-potassium	3.7	3.3	4.7	3.6		3.6	3.9	4.1	3.5-5.5mEq/l
S-chlorine	98		92	90		95	97	98	96-115Eq/l
S-calcium			7.28	7.52		7.75	8.94	9	8.6-10.3mg/l
S-magnesium				1.58		1.74	1.70	2.0	1.7-2.55mg/l
Albumin		2.61				2.14	2.51	3.0	3.3-5.2gm/dl
Urea	36			17		13	15	27	13-45mg/dl
Creatinine	0.6			1.01		0.78	0.96	0.74	0.5-1.5mg/dl
Total protein		5.10				6.18	6.68	6.2	6-8.3gm/dl

Table 1: Biochemical investigation.

Observation and Discussion

Pathological diagnosis- 35%TBSA flame			DOA-24/02/21	
Days	**Current diet**	**Necessary modification**	**Expected result**	**Observation**
Day1-3	NPO	Fluid intake was4.2l in8hrs and remain4.21 in 16 hrs	The fluid level maintained	None
Day4-6	Orally high protein diet liquid diet	Protein (resource high protein supplementation should given 4 scoops with 300 ml luke warm water 5 feeds continue with kitchen feeding. Iron rich food-jaggery- 15 gms, pomegrantate, apple mixed juice 300 ml, Tropicana juice, cocanut water, etc. Egg flip -2 nos Dalia kheer-1 m k Blended boiled dal,milk-200 ml with badam fist, oats kheer	To heal the burnt area. To balance the sodium potassium level. To maintain the calorie wanted for BMR and Muscle building. To meet the Iron requirement.	
Day 7-12	Orally High protein diet	The diet was continued. Only coconut water is added to the diet.	To keep up the potassium and other mineral loss	Patient's response was good. Body heals slowly. And also she was able to take the normal diet.
Day 13-17	Normal High Protein Diet	High protein diet includes:- Milk-2-3 glasses Egg whites 6-8 no. s Soybean, dal, paneer, nuts, chenna. Protein powder 4scoop for 2 times. Iron rich-pomogranate, apple, guava, green leafy vegetables, dates etc. Potassium rich banana, tomato or salad.	To speedy the healing process. Maintain the electrolyte level. To minimize the loss.	Sodium level was increased. Also blood Hemoglobin level increased. Total protein level increased. Patient's burnt area slowly recovered.
Day 18-25	Changed to soft high protein diet Olive oil -3tsf	Protein supplementation as before. Diet includes - idli, coconut or chana chutney, Paneer curry, vegetable khichdi, dal, egg flip or poach, sago or dalia kheer, paneer curry, soybean rice etc. Egg white 5-6 no.s.	To speedy the healing process. To fight against infective agents.	As she felt nausea or vomiting diet is modified. Recovery of patient at it's peak level.
Day 26	Soft Diet	High protein normal diet	To recover the wound	She felt good and want to go home. Patient was discharged. She is very active and responsive.

Table 2: Dietary Management.

Biological parameters

Parameters	At the time of admission (25/2)	At the time of discharge (21/3)	Normal value
Haemoglobin	12.7	13.9	12-15gm/dl
Total rbc count	5.73	5.0	4.5-5.9 10^6/ul
TWBC	19.42	11.0	4-10 10^3/ul
Platelet count	302	384	150-400 10^3i/l
S-sodium	138	131	135-155mEq/l
S-potassium	3.7	4.1	3.5-5.5mEq/l

S-chlorine	98	98	96-115Eq/l
S-calcium	-	9	8.6-10.3mg/l
S-magnesium	-	2.0	1.7-2.55mg/l
Albumin	-	3.0	3.3-5.2gm/dl
Urea	36	27	13-45mg/dl
Creatinine	0.6	0.74	0.5-1.5mg/dl
Total protein	-	6.2	6-8.3gm/dl

Table 3

Conclusion

The conveyance of nourishing help is a fundamental component of burn care, and the principle objective is basically to stay awa from dietary complexities. Successful appraisal and the manage ment can advance injury healing and decline mortality rate. We took here outrageous Care of the patient. Medication with diet as sists the patient with recuperating. The degrees of minerals wer kept up with by food. Likewise the guardians tackled their job loy ally. our hospital care made the climate as house. Essential scienc investigation of the metabolic changes after consume should be combined with randomized planned clinical preliminaries to de termine the best healthful help for the consume patient.

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