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Nutrition – The key element in treatment of pressure ulcer

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ABSTRACT

Pressure ulcer healing is a complex process and remains a major healthcare problem despite the advances in the field of medicine. Inadequate dietary intake has been identified as a key risk factor for both development and healing of pressure ulcers. It is very much essential to make sure the consumption of adequate calories, protein, fluids, vitamins and minerals that supports the healing process. Inclusion of a variety of foods from five food groups will help in preventing /treating pressure ulcers. This article is focused on adult nutrition needs including hydration to avoid or treat pressure ulcers.

Keywords— Pressure ulcer, Optimum nutrition, wound management, Dietitian, NCP

1. INTRODUCTION

Nutrition is one of the most important elements in treating pressure ulcer but is often ignored in the management of pressure ulcer. Attention to basic nutrition and providing adequate nutrients are the key components in the healing of pressure ulcer.

Pressure ulcers are painful, and indirectly affect patients' food intake, mobility and health. It is commonly known as bed sores or pressure sores. It happens when something is always pressing or rubbing against an area of skin (1). Pressure ulcer is serious problem and it is associated with adverse health outcomes and involves high treatment costs.

2. HOW IT OCCURS?

Pressure ulcers can occur when more or less pressure is applied to an area of skin over a short period of time or longer period of time. This extra pressure interrupts the blood flow. When there is not adequate blood supply the affected skin will not receive adequate oxygen and nutrients thereby leads to ulcer formation. These ulcers are more common in immobilised people. It also can develop in person with mobility problems, under-nutrition, elderly and person who suffer with urine or bowel incontinence (2).

3. NUTRITIONAL ASSESSMENT OF PRESSURE ULCER

Medical Nutrition Therapy (MNT) is an integral part of the healing process. Delivery of adequate nutrition and hydration will not only help in fast healing of pressure ulcer, it also improves the quality of life of patients with pressure ulcer. Hence MNT should be provided to all individuals who are at risk of developing pressure ulcer or having pressure ulcer.

Malnutrition can be implicated in the development of pressure ulcer and may delay the healing process as well. Therefore early identification and management of risk factors is of the utmost importance in the prevention of avoidable pressure ulcer development. If malnutrition persists then the outcome of the treatment is always associated with increased risk of morbidity and mortality; hence it is mandatory to identify and treat malnutrition quickly when there is a risk for development of pressure ulcers.

The nutrition screening process is the preliminary step used to identify individuals at nutritional risk or with a nutrition problem. This screening helps to determine if a comprehensive nutritional assessment is needed. Nutrition screening should be completed soon after the admission into the hospital and when nutrition risk is identified, there should be an early referral to the dietitian for a comprehensive nutrition assessment and intervention.

Hengstermann et al. in his German study concluded that the Mini Nutritional Assessment, a validated nutrition assessment tool, which was “easy to use to determine the nutrition status in multi-morbid geriatric patients with pressure ulcers.”(3)

The data which need to be looked into in nutrition assessment includes an individual's food/nutrient intake, anthropometric measurements (height, weight, body mass index, waist circumference etc.) lifestyle (sedentary/active) and medical history (lab results, medical procedures, diagnosis).

4. RESPONSIBILITY OF DIETITIAN

A registered dietitian in consultation with interprofessional team should develop and document an individualised nutrition intervention based on the nutritional needs, feeding route and goals of care. Complete comprehensive assessment includes the following:

- Provide complete comprehensive nutrition assessment including estimating calories, protein and fluid requirements
- Diagnose nutrition problem
- Prescribe diet recommendations and intervention
- Monitor and evaluate intervention
- Reassess the condition and modify the intervention as per the patient's condition.

The individual's actual intake should be assessed to determine if the patient is consuming sufficient food and fluid to meet their estimated nutritional needs.

5. VITAL NUTRIENTS IN PRESSURE ULCER PREVENTION AND TREATMENT

Nutrients are recommended primarily based on thorough nutritional assessment which follows application of best practice guidelines to deliver adequate nutritional support. Though treatment relies on best practice guidelines, individualized care plan is necessary to focus on improving and/or maintaining the patient's overall nutritional status, acceptance of nutrition interventions, and clinical outcomes.

5.1 Macronutrients

The following discussion would help to understand better about the importance of macronutrients in healing.

5.2 Energy

Energy is generally derived from macronutrients. It is very much essential for not only ulcer healing but to promote anabolism and to compensate loss of energy and protein due to hyper metabolism which occurs in undernourished patients. The requirements of macro nutrients are derived based on age, gender, weight, height activity and underlying medical condition form the basis for determining baseline caloric requirements. Calories may be adjusted based on weight status of the patients. Individuals in a hyper metabolic state have caloric requirements above the baseline calorie requirements and who are obese may require lesser calories. Author Wilson and colleagues in their study highlighted that in between oral nutritional supplements along with proper diet improves better absorption of nutrients(4).

5.3 Protein

Protein is a vital nutrient which is responsible for the synthesis of various enzymes in healing process, cell multiplication and collagen synthesis. When adequate energy is provided then proteins will be spared from being utilised for energy purpose. There is increased demand for nutrients due to hyper catabolic state. It is very important to achieve the targeted amount of protein to yield better results. The MNT treatment plan should focus on providing sufficient calories as the energy source and protein for tissue maintenance and repair. Healing requires adequate protein, and research indicates increasing the amount of protein provided is an effective intervention to promote healing. Randomised clinical trials indicate that high protein diet promotes healing of ulcers and to meet up the nutrient demand, enteral nutritional supplements have to be initiated along with diet. Enteral supplements are the most effective source of nutrition support to improve the protein status of patients with pressure ulcers (5).

5.4 Fluids

Adequate fluid intake should be encouraged as water is a solvent to dissolve many of the nutrients and medium to transport wastes from the body. The dietitian calculates fluid requirements and the general formula is 1 ml /kcal if there is no comorbidities, when necessary clinicians assess for tolerance and reassess as and when required.

5.5 Micronutrients

Vitamin C, zinc and copper are some the vitamins and minerals which are instrumental in skin health and collagen formation. Any of these micronutrient deficiencies can lead to delayed wound healing of pressure ulcers. Supplementation of these vitamin and minerals are recommended (5).

5.6 Dietary guidelines to follow in the management of pressure ulcer

- All the individuals should undergo nutritional screening and assessment when admitted into the hospital. After screening it is mandatory to refer to dietitian for early assessment and nutritional care. Evidence based guidelines on nutrition and hydration for individuals who exhibit nutrition risk and who are at risk of pressure ulcer or having pressure ulcer are as follows as per National Pressure Ulcer Advisory Panel (NPUAP)(5).
- Dietitian should assess the weight status to figure out weight change particularly weight loss
- Assess adequacy of the total recommended nutrient intake and also the ability to eat independently
- Provide sufficient calories at least 30-35kcalories/Kg desirable body weight. Adjust based on weight loss or weight gain. Reassess and modify if patient gain or lose weight.
- Provide adequate protein to have positive nitrogen balance so that proteins will not be spared for energy utilization and can make sure it will be utilizing for the synthesis of collagen and tissue regeneration. At least 1.2-1.5 g of protein/kg of desirable body weight has to be recommended. It is necessary to assess the renal function when patient is on a high protein diet.
- Provide oral nutritional supplements in between the meals to cope with demand for energy and protein.
- Provide adequate fluids to have good hydration, if patient has nausea and vomiting or heavily exuding wounds, then additional fluids have to be added in the treatment plan.

- Finally encourage patients to have a balanced diet which includes all the food groups which is a store house of nutrients that would help in healing process.
- If oral intake is appreciable then dietitian may consider and recommend clinicians to prescribe enteral nutrition to meet the requirements. If enteral feeding is initiated then it is very important to make sure planned feeds are being fed completely.

6. CONCLUSION

Malnutrition precipitates morbidity and mortality. Protein deficiency is closely associated with poor outcomes for patients and there is a need to consider higher protein requirements above the recommended dietary allowance to improve clinical outcomes. Early assessment and identification of nutritional problems becomes crucial. Timely intervention would help in preventing and treating pressure ulcers. Eating a healthy, balanced diet that contains an adequate amount of protein and a good variety of vitamins and minerals and good hydration can help prevent skin damage and speed up the healing process. Evidences strongly agree that early referral to the dietitian as soon as risk is identified of a pressure ulcer is the key to enhance speedy recovery.

7. AUTHORS CONTRIBUTIONS

MB conceived of the presented idea and developed the paper. RS encouraged the author and provided inputs. All authors discussed the entire paper and contributed to the final manuscript.

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