Extended Abstract
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Brain Disorders: Nutritional status and macronutrients adequacy of some traumatic brain injury patients attending a specialized unit in the state of Qatar- Ghazi Daradkeh-Al Khor Hospital

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Abstract

Objective: The aim of this study was to evaluate the nutritional status and macronutrients adequacy of traumatic brain injury (TBI) patients and controls, attending treatment from an exclusive unit in Qatar. Research Design

Methods: This study was conducted among male (TBI) in-patients admitted in Rumailah Hospital Rehabilitation Unit, Hamad Medical Corporation-Doha, Qatar from August 2014 to June 2015 (21 cases and 21 healthy volunteers). The attendees were consecutive patients with TBI. Demographic variables were solicited via medical evidence or directly from the attendees with TBI. Anthropometric evaluation and dietary intake (24- hour recall) were collected and assessed by the **super tracker.**

Results: Half of the members (52.4%) were of age 30 -38 years range. Around 23.8% of cases were classified as having 'mild TBI' while 28.6% and 47.6% were classified as average and severe TBI respectively. In terms of nutritional parameters, three fourth (76.2%) of the cases were at high or average risk of malnutrition, 23.8% of cases were underweight, while 66.7% in the normal range and 9.5% were overweight. TBI patients were noted to have a insufficiency in energy (30.2%), carbohydrate (43.0%), protein (24.8%), and fibre (54.1%) intake.

Conclusion: Despite the high currency of TBI in emerging economies such as Qatar, to our knowledge, there is a dearth of studies inspect the nutritional status and it's agree among the TBI population. This study specifies that TBI patients in Qatar are at a high risk of developing malnutrition, and macronutrients insufficiency. Therefore, nutritional assessment, involvement, and support are highly essential to improve TBI patient's health status beyond the brain injury.

INTRODUCTION

TBI can be explained as a disturbance in the normal function of the brain caused by a blow or jolt to the head or a penetrating head injury (Sueur et al., 2013). Traumatic brain injury (TBI) is the leading causes of deaths and disability, accounting annually for 50,000 deaths and 235,000 hospitalizations (Global Burden of Disease Paediatrics Collaboration, USA, 5.3 million individuals are suffering from T problems (Al-Reesi et al., 2013) and similar high rate has been noted to occur in other developed countries economies such as those country in the Arabian Gulf, due to increased motorization, TBI is common due to high number of road traffic accident. Therefore, in the regions, there are urgent needs to quantify the sequel as well to contemplate remedial intervention among the victim of TBI. The first stage of cerebral injury after TBI is direct tissue damage and impaired regulation of Cerebral Blood Flow Before (CBF) metabolism which, in turn, has direct bearing to functionality of the individual affected by the TBI Victim of TBI have been documented to incur energy and protein deficits which, in turn has been postulated to have direct bearing on poor functional prognosis. Some studies have suggested that mechanisms specific to pathology entailed in TBI contribute energy and protein deficits while other studies have indicated that functional sequel of TBI renders the victim of TBI to be incapable to consume required energy and protein Peripheral amino acids (from skeletal muscle) and glycerol/free fatty acids (from adipose tissue) was ignites an inflammatory response that supports acute-phase functions after TBI. The total amount of visceral protein actually produced is less than the amount of skeletal muscle catabolized. Approximately 10% loss of skeletal muscle within one week, if caloric intake was inadequate for 2-3 weeks, which results in increased risk of mortality The brain-injured patient also oxidizes fatty acids at an increased rate, in addition to using muscle protein stores for fuel Catabolism of protein has various implications for patients with TBI, it may be affected by decreased nitrogen efficiency, immobility steroid administration, and decreased nutrient intake. Weight loss, muscle wasting, and lowered levels of visceral proteins (prealbumin, albumin, and transferrin) are commonly evidenced signs after TBI (Ott et al., 1994; Cerra et al., 1987). Previous studies have indicated that nutritional status could play an important role for heightening functional recovery of people with TBI. To our

knowledge, such studies have not been forthcoming from Arabian Gulf countries where TBI constitute a leading burden of disability and dependency (Bener et al., 2010). In order to fill the gap in the literature, the present current case control study aim to find out the link between nutrition and TBI. For this we evaluated the nutritional status, macronutrient adequacy among TBI and the influence of trauma severity on nutrient intake among patients with TBI attending Rumailah Hospital, Doha, Qatar. METHODS Patients This study was conducted in rehabilitation ward at Rumailah Hospital, Doha - Qatar from August 2014 to June 2015. Twenty five post traumatic brain injury patients, aged 18 – 65 years, males, free of any chronic diseases and 21 healthy participants as control group were recruited. Comparative normal healthy subjects were recruited from the community. Cognitive assessment for all patients was conducted using the Montreal Cognitive Assessment (MOCA) (Nasreddine et al., 2015). Four patients were excluded from the study due to incomplete nutritional assessment or refused to continue

Demographic characteristics:

Demographic information, including age, sex, education level, marital and smoking status were collected using a structured questionnaire Weight, height and body mass index (BMI) were measured and for patients who were unable to stand, height was estimated by using knee height, ulna length and demi - span equations as detailed elsewhere (Lohman et al., 1988; Cheng et al., 2001; Gauld et al., 2004; Bassey, 1986; Organization, 2012) Energy (Kcal), carbohydrate (gm), protein (gm), fat (gm) and fibre (gm) intakes were assessed by using the 24 – hour recall method (Lim et al., 2012) through face–to–face interview with each subject. Household utensils with different portion size of common foods were used to assist the patients to report the accurate amount of food consumed. Food intake was analysed electronically using electronic program the percentage of carbohydrate, protein, and fat was calculated as calories of each nutrient divided by the actual energy intake. Macronutrients adequacy was calculated based by dividing the actual intake by Recommended Daily Allowances (RDA) (Report of the Panel on Macronutrients, 2005).

Nutritional Status and TBI Severity

"Malnutrition Universal Screening Tool" (MUST) (Henderson et al., 2008) was used to assess the nutritional status of all subjects and it was classified as: no risk, moderate risk and high risk of malnutrition when MUST score was 0, 1 and ≥ 2 respectively. Severity of TBI was classified into mild, moderate, and severe based on Glasgow Coma Scale (GCS) when it ≥13, 9 -12 and ≤ 8 respectively (Kondrup et al., 2003).

Ethical approval

The written informed consent was obtained from each participant. The study was approved by Ethical Committee of Medical Research Centre - Hamad Medical Corporation.

Note: This work is partly presented at 5th International Conference on Brain Disorders and Therapeutics Madrid, Spain