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Editorial

# Malnutrition Issues in Patients with Head and Neck Cancer

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Since its introduction in the 1950s, the TNM staging system has been regarded as the most important prognostic cancer classification method. Patient health status is considered as a major disadvantage even by the originators of the TNM concept. Coexistent disease (as malnutrition) can strongly affect a patient's survival and scope for treatment. Progressive weight loss and malnutrition are commonly found in patients with Head And Neck Cancer (HNC) (especially the hospitalized ones), the similar to the lung and gastrointestinal cancer [1,2,3,4]. Weight loss during the treatment for HNC is a major concern. It can result from either the neoplastic process itself or the applied therapies such as surgery, radiotherapy and chemotherapy. They all lead to additional complications e.g. as difficulty in oral intake [1,5]. The incidence of malnutrition in cancer patients ranges between 40 and 80% while the prevalence ranges from 50% to 80% depending on tumor type, tumor location, stage of disease, received treatment and the type of nutritional assessment method used [6]. All these conditions and nutritional deficits have a significant impact on mortality, morbidity, and quality of life in patients with HNC [7-12]. Timely identification of nutrition problems may improve a cancer patient's prognosis and increasing the patient's response to therapy with reduction of the rate and stage of the complications. There are many methods of subjective and objective assessment of patient's nutritional status generally used in patients. Anthropometric Measurements (weight change, arm muscle Circumference (AMC), Triceps Skin-Fold Thickness (TSF)) and biochemical parameters (such as serum albumin, transferrin). Subjective Global Assessment (SGA) [13] and Patient-Generated Subjective Global Assessment (PG-SGA) are designed especially for cancer patients and commonly used also for patient with HNC [14]. European Society for Clinical Nutrition and Metabolism also recommend other tools such as Nutritional Risk Screening (NRS-2002 for hospital admission; the Malnutrition Universal Screening Tool (MUST), the Mini Nutritional Assessment (MNA) [15]. Relatively new tool such as Phase Angle (PA) determined by Bioelectric Impedance Analysis (BIA) is used and allow the objective determination of prognosis [16]. The utility of this nutritional screening tool has been evaluated by its ability to predict relevant clinical outcomes such as complications, treatment response, survival and Quality Of Life (QoL). Different methods have been compared to assess prognosis and ability of prediction of clinical outcome, but only just few assess the impact on overall survival [16]. BIA is the objective diagnostic method and has been established as a valuable tool in the evaluation of body composition and nutritional status in many patients' conditions including cancer [8-22]. BIA evaluates body components such as Resistance (R) and Reactance (Xc) by recording a voltage drop in applied current [23]. PA is proportional to the ratio of reactance and resistance – it is also proportional to the ratio of body cell mass to fat-free mass. PA reflects the relative contributions of fluid (resistance) and cellular membranes (reactance) of the human body. By definition, PA is positively associated with reactance and negatively associated with resistance [24]. Resistance is the restriction to the flow of an electric current, primarily related to the amount of water present in the tissues. Reactance is the resistive effect produced by the tissue interfaces and cell membranes [25]. Reactance causes the current to lag behind the voltage creating a phase shift, which is quantified geometrically as the angular transformation of the ratio of reactance to resistance, or PA. Thanks to its potential to detect changes in tissue electrical properties PA has been found as a prognostic, nutritional, membrane cell function or health marker in various disease conditions [26-37].

There is no consistent objective tool or standard of care for nutrition diagnosis in oncology settings. The issue is complicated by the lack of universal agreement on the operational definition of malnutrition and on the validity of the assessment indicators. Currently, most of the nutrition screening in oncology settings is completed by doctors or nursing professionals. SGA is one of them, which is a subjective tool but still valid to predict decrease of the quality of patients life. The SGA is a clinical technique that combines data from subjective and objective aspects of medical history if they are available. The SGA has been extensively validated as a nutritional assessment technique in oncology patients [21]. The impact on their survival was reported in few articles by performing

the evaluation of PA in comparison with SGA. Such analyses were conducted in patients with pancreatic cancer, advanced colorectal cancer or lung cancer [32-35]. BIA is a relatively new tool to be assessed as a useful nutritional status diagnostic method for health, especially in chronic diseases (HIV, dialysis). It is questionable to use this method in day by day practice and also PA (adjusted or unadjusted) as prognostic factor for making clinical decision for advanced cancers. The main issue that is still being investigated is their impact on survival prediction as a crucial factor in the decision making process. Nutritional status could be assessed by different tools. Some of them have been confirmed in a statistically significant manner as valid prognostic factors – Palliative Prognostic Score (PAP), albumin level, lean body mass. In the study of Hui, 2014 it was confirmed that PA is a significant predictor of poor survival independently of established prognostic factors in advanced cancer setting [38]. In this study results for general population of advanced cancer patients (breast, gastrointestinal, genitourinary gynecological, head and neck, hematological respiratory and others) were presented. Hui showed the different types of cancer but only few studies presented detailed data to create a table for the most actual types of cancer such as breast cancer, lung, colorectal and finally HNC [32-37]. In the study of Hui the median survival were assessed depending on range of PA – from 2 to 3, 4 to 5, and 6 with a median survival of <3 months, 3 months to 6 months, and>6 months, respectively. The median survival for patients with PA 2 to 2.9, 3 to 3.9, 4 to 4.9, 5 to 5.9 and above 6 was 35 days, 54 days, 112 days, 134 days, and 220 days, respectively [39]. In studies concerning specific cancer the threshold or cut-off points were presented. Such results were achieved in studies for pancreatic cancer and advanced lung cancer, colorectal cancer. The stratification threshold mean PA were 4.58 for advanced lung cancer and 5.08 for advanced pancreatic cancer and it was 5.58 for advanced colorectal cancer [32-35]. Although different cut-off points were indicated, this parameter had prognostic value for survival or progression of the disease. Hui [39] and Davis [40] confirmed that low PA values determined patients with short life expectancy while higher values of PA were correlated with longer survival.

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