

## Sarcopenia: Another Emerging Disorder - Situation in Saudi Arabia

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### Abstract

Sarcopenia is progressing with age. The disorder involves loss of muscle tissue that contributes to the deterioration of muscle function, risk of falls, fractures and severity of disability. Extensive research studies exist that reported vitamin D deficiency in Saudi Arabia across all population groups, particularly, in the elderly. Only few studies have investigated sarcopenia in Saudi Arabia, while necessarily no data exist that have investigated relation between sarcopenia and vitamin D deficiency in the context of peculiar dietary and physical activity practices of the Saudi populations. In this paper, we discuss sarcopenia and its relationship with vitamin D. In the last part of this review. We also present a snapshot on vitamin D status and sarcopenia in Saudi Arabia.

**Keywords:** Sarcopenia; Disorder; Vitamin D

### Introduction

Aging is indispensable [1] and is closely associated with changes in the human body [2-4]. There is a loss of muscle mass, muscular atrophy as well deterioration of the function of tissues and organs [5]. All these processes lead to impairment in physical fitness and in combination with chronic co-morbid diseases can affect physical functionality of older people. The sarcopenic syndrome increases the risk of falls, injuries, intensifies disability [6]. It can also be part of the weakness syndrome. It is known that the sarcopenic syndrome is an important factor increasing the risk of falls and fractures bones and the increasing disability of older people. Bearing in mind the shorter average life expectancy in men and the fact that the incidence of sarcopenia increases after the age of 80, it is referred to as a problem affecting mainly women.

The concept of sarcopenia was introduced in 1989 by Rosenberg [7]. The word itself comes from the Greek and means the body (sacro-) loss (penia) or 'loss in body'. Rosenberg described the sarcopenia as progressive loss of muscle tissue with age. The European Working Group on sarcopenia in Elderly Persons (EWGOSP, The European Working Group on Sarcopenia in older People) in 2010, gave the definition of sarcopenia as a loss in both muscle mass as well as the resulting reduction in muscle function [8]. Sarcopenia is

multifactorial [9] - hormonal changes, eg reduction of concentration growth hormone, menopause and andropause, may explain protein synthesis disorders. Insufficient physical activity (sedentary lifestyle) can explain the chronic protein loss. Cytokines (IL6, TNF-alpha) and stress hormones (cortisol) cause rapid destruction proteins in muscles [10]. There are two types of sarcopenia: primary, when out of age and genes there is no other aetiological and secondary factor, dividing into three subgroups (associated with physical activity, occurring in the course of chronic diseases and dependent on nutrition). The only scientifically proven method of treating sarcopenia is resistance training. However, little attention has been paid to the role of nutritional support for this group of patients.

In the light of today's scientific reports, nutrition can be an important element supportive for patients with progressive sarcopenia [11]. However, as of today, there is very little research, which may unambiguously confirm the effectiveness of the nutritional support used in this disease entity. The most important from of dietary intervention is to bring the patient to the state of proper nutrition of the body, prevention of malnutrition, which additionally deepens the loss of muscle tissue. There are no studies to date that would be unambiguously confirm the proven role of antioxidants

in the prevention or treatment of sarcopenia. Low calorie diet used in the treatment and prevention of sarcopenia, except that it cannot lead to malnutrition must contain the correct amounts of all nutrients and vitamins. It decreases the production of free radicals, stimulates biogenesis as well as defense mechanisms mitochondria in the muscles, and thus the rhabdomyolyses apoptosis can be prevented. Daily calorie restrictions, however, are often poorly tolerated by older people correct body mass index and research on the influence of restriction diet on the progression of decay muscle and DNA damage are still ongoing.

The importance in the diet of people with progressive sarcopenia also has normal serum vitamin D concentration [12,13]. However, low concentration of 25-DHO and high concentrations of parathyroid hormone (PTH  $\geq$  4.0 pmol / liter) increase the risk of development Sarcopenia in older men and women. These findings are particularly important from the point of view that vitamin D deficiency is common and highly prevalent in Saudi Arab [14-16]. This is more pronounced in females and in the younger age groups. Wearing of traditional clothes, deliberate avoidance of the sun, and inadequate dietary intake are likely to be the principal causes of low vitamin D levels [17]. At the same time, sarcopenia is an emerging health issue in Saudi Arabia [18]. Worrisome is the fact that no studies have comprehensively addressed the problem of sarcopenia in relation to vitamin D. We are of the view that the relation between sarcopenia and vitamin D may be stronger in Saudi population as the patterns of other contributing factors (e.g. diet and physical activity) are suggestive of of poor practice.

## Conclusion

In conclusion, sarcopenia is a disorder related to nutrition and dietary practices. Sarcopenia is multifactorial - meaning that the patient should be treated by physiotherapist, medical doctor as well as a nutritionist or dietitian. It is important to arrange a diet for the elderly and progressive sarcopenia, maintaining the proper state of nutrition, preventing malnutrition, taking care of correct concentration of vitamins and minerals as well as moderate fat intake. It is worth taking a closer look at this issue to examine the relationship between occurrence of sarcopenia syndrome and the influence of dietary factors. Prophylaxis of sarcopenia may contribute favorably to reducing the risk of falls and fractures in older people, which may shorten the time of hospitalization and reduce the costs incurred by the health service. There is an urgent attention of research studies that investigate sarcopenia with relation to nutrition in the Saudi Populations.

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