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Sleep disorders in chronically dialyzed patients

Zaburzenia snu u pacjentów przewlekle dializowanych

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Abstract

Sleep disorders are a significant problem in the dialysis patient population. They range from 30 to 80% of patients with kidney disease. Sleep submergers carry a wide range of consequences, both psychological and somatic. Obstructive sleep apnea, restless legs syndrome, excessive daytime sleepiness and insomnia are the most common sleep disturbances among dialysis patients. The aim of the study was to analyze the conditions and

the most frequently occurring sleep disorders in patients with chronic kidney disease, dialyzed based on the subject literature review. Sleep disorders are both quantitative and qualitative. They carry numerous negative effects in the sphere of mental and somatic health of the patient, they decrease the overall quality of life. They heighten the already increased cardiovascular risk in the dialysis population. Therefore, early recognition and treatment of sleep disorders in dialysis patients is important. Periodic assessment of the sleep quality of a dialysis patient should be included in the therapy standard.

Key words: sleep, sleep disorders, dialysis, chronic kidney disease

Streszczenie

Zaburzenia snu stanowią istotny problem w populacji pacjentów dializowanych. Dotyczą od 30 do 80 % chorych z chorobami nerek. Zaburzenia snu niosą szeroki zakres konsekwencji zarówno psychicznych jak i somatycznych. Obturacyjny bezdech senny, zespół niespokojnych nóg, nadmierna senność w ciągu dnia oraz bezsenność to najczęstsze zaburzenia snu wśród pacjentów dializowanych. Celem pracy była analiza uwarunkowań i najczęściej występujących zaburzeń snu u pacjentów z przewlekłą chorobą nerek, dializowanych w oparciu o przedmiotowy przegląd piśmiennictwa. Zaburzenia snu mają charakter zarówno ilościowy jak i jakościowy. Niosą za sobą liczne negatywne skutki w sferze psychicznego i somatycznego zdrowia pacjenta, obniżają ogólną jakość życia. Potęgują i tak już zwiększone w populacji chorych dializowanych ryzyko sercowo-naczyniowe. Wobec powyższego istotne jest wczesne rozpoznawanie i leczenie zaburzeń snu u chorych dializowanych. Okresowa ocena jakości snu pacjenta dializowanego winna być ujęta w standardzie terapii.

Słowa kluczowe: sen, zaburzenia snu , dializa, przewlekłą choroba nerek

Admission

Sleep is one of the basic biological needs of the body without which a person can not function properly. It occupies 1/4, 1/3 and sometimes human life. Need for sleep is individual. It depends on the nature of the work and activities we perform, our age, character, habits or skills resting during the day. Many researchers stress the importance of sleep in human life. The dream is renewing energy resources, allows spare limited energy resources, participates

in the regulation of mood, plays a role in neuroplasticity, or consolidates procedural memory [1-4].

Sleep can be divided into two main phases. It is NREM sleep (non-rapid eye movement) and REM (Rapid Eye Movement). NREM sleep is deep sleep, free of eye movement. In the course of delta waves appear in brain electrical activity. REM sleep is the phase of sleep with rapid eye movement. In this phase of sleep most frequently appear in dreams, or simply dreams [5].

According to available literature on sleep disorders from 30 to 80% of patients with kidney disease [6-8]. Merlini et al. [7] among the most common disorders of sleep in the patient population hemodialysis indicated insomnia (69% of patients), restless leg syndrome (18%), obstructive sleep apnea (24%) and excessive daytime sleepiness (12%) .

Objective of the work

The aim of the study was to analyze the conditions and the most common sleep disorders in patients with chronic kidney disease, dialysis based on objective review of the literature.

Material and methods

In the paper the method of systematic analysis of the literature. A literature review was held by keyword in search engine databases Google Scholar, multiwyszukiwarki EBSCO Discovery Service (EDS), in scientific databases and electronic journals Polish industry and information available on the websites. The collected information was developed and presented by selected thematic areas.

Results

Need for sleep

The need for sleep is individual, biologically conditioned. Physiologists studying this process indicates its wide boundaries ranging from 4 to 10 hours a day. Average need for sleep human adult is 5-7.5 hours a day. People who sleep short (short sleepers), require less than 5.5 hours of sleep and do not show any signs of fatigue or sleepiness during the day. While those above Sleeping 9 hours are referred to as long sleeping (long sleepers) [5].

Physiology of sleep

Sleep is occurring spontaneously and periodically a physiological condition which is characterized by the abolition of physical activity, reduced the reactivity of the motor, reduced responsiveness to stimuli, and the adoption of stereotyped in [9]. The processes taking place at that time are subjected to regular rhythm. Sen consists of two different states: sleep with

rapid eye movements (REM) and no fast movements (NREM). Alternately changes the passage of NREM and REM are arranged in cycles lasting about 70-120 minutes, repeated 4-5 times during the night [10]. Usually after each cycle followed by shortness of sleep, accompanied by a short wake. NREM sleep includes a total of about 75-80% of sleep, and REM 20-25% [10]. The proportions of the phases and stages of sleep changes with age. Participation deep sleep at night sleep is markedly reduced in adults with age. At advanced stages may not be present at all [5].

Mental and somatic consequences of sleep disorders

Sleep disorders leads to many negative consequences of mental, such as lowering the efficiency of cognitive functions: impairment of attention, memory impairment, impaired concentration, impaired perception, mood disorders, emotional disorders, increasing irritability and aggressiveness, reduced motivation and increasing difficulty with tasks that They require planning and predicting [6, 11,12,13]. The literature stresses the syndromes compound having both a sleep deficits and dysfunction. This problem has been recognized by the World Health Organization and included in the classification of Diseases and Related Health Problems ICD-10, wherein the sleep disorder distinguished as separate entities within the group of mental disorders (F51 group -nieorganiczne sleep disorder), and neurologic (group G47 - organic sleep disorder) [14]. In contrast, in 2014, we published the third version of the International Classification of Sleep Disorders (International Classification of Sleep Disorders

ICSD), covering all disease entities related sleep disorders. this classification characterized by: first insomnia, second respiratory disorders associated with sleeping, 3. hypersomnia, circadian rhythm fourth, fifth parasomnias, 6. movement disorders associated with sleeping, 7. The other sleep disorders [16]

This indicates the adverse effect of sleep restriction on hormonal systems and metabolic parameters. It has been shown that reducing the amount of sleep is associated with an adverse effect on the circadian rhythm of cortisol secretion and concentration, increasing the concentration of the exponent indicating the inflammation and an increase in total cholesterol and LDL cholesterol. Sleep deficiency and excess cortisol binds to the development of obesity, with the progress of hypertension and development of atherosclerotic lesions in the cardiovascular system [11,16]. Insomnia also increases the risk of diabetes following an increase in insulin resistance [11]. Sleep disorders are also a factor risk of development and progression of chronic kidney disease (CKD, chronic kidney disease) [17].

The most common sleep disorders in patients on dialysis

The problem of sleep disorders are particularly burdened patients with end stage CKD requiring dialysis. This is due to systemic disorders of homeostasis, disorders of water and mineral water, uraemic toxins, coexistence of other diseases, as well as the necessity of permanent dialysis participate in the program. Obstructive sleep apnea, restless legs syndrome, excessive daytime sleepiness and insomnia is the most common sleep disorder among dialysis patients [7,8, 11].

Obstructive sleep apnea(OBS) is produced by partial or complete obstruction of the upper airway at the level of the larynx, the walls of which are built exclusively from the muscle. During sleep, the reduction in muscle tension, and ultimately to reduce the light throat. Predisposed to OSAS, inter alia, hypertrophy of tonsils, abnormal facial structure or a large amount of adipose tissue in the neck [11,19]. In dialysis patients, a higher incidence of AML is associated with the states of fluid [18], retention of fluids and their accumulation in the lowermost parts of the body. When a person is lying fluids accumulate in the upper parts of the body, including soft tissues of the neck and tongue which lead to reduced patency of the upper airway at the level of the throat [11].

Recognition is based on the OBS polysomnography, which allows determination of apnea / hypoventilation. This ratio enables a statement whether the OSA if there is <5 , and if there is to specify the stage. Index apnea / hypoventilation > 30 indicates severe OSA [11]. United OSA due to the fact that a risk factor for cardiovascular complications require implementation of diagnosis and treatment.

The treatment is based on:

- avoiding depressive drugs affecting the respiratory center,
- avoiding alcohol,
- changes in lifestyles embrace weight reduction, taking position on the side during sleep and use stabilizers support the lower jaw to ensure a patent airway.

Restless Legs Syndrome(RLS, restless legs syndrome) by ICD-10 is classified as ' Other specified disorders of extrapyramidal motor function disorders "(G.25.8), also known as Ekbom's syndrome-Willis. It is a sensorimotor disorder manifested forced mobility of the lower limbs, especially during the rest mostly in the night [20]. RLS is caused by a feeling anxiety, and paresthasias in the form of tingling, numbness and smoking. After rotation an unpleasant feeling to the goalkeeper [21]. The severity of RLS symptoms significantly interferes with sleep and prolongs the period. This results in a significant lack of sleep at night and consequently hinder the body's regeneration.

Due to the complex pathophysiology of RLS exists as a separate entity but often this syndrome is diagnosed as a disease associated with systemic diseases with impaired extending water, magnesium, iron oxide, hypoxic conditions in diseases of the blood or polyneuropathy. Said disorders are present in end-stage CKD requiring dialysis. RLS requires an effective therapy due to the fact that not only is the cause of deterioration in the quality of life, but also an increased risk of cardiovascular morbidity and mortality in dialysis patients [22].

Basic diagnostic criteria for RLS by the International Restless Legs Syndrome Study Group [23] (the diagnosis is necessary to declare all four symptoms):

- the urge to move the lower limbs connected typically - or caused discomfort and unpleasant sensations in the legs (urge to move sometimes occurs without causing uncomfortable feeling and sometimes covers the upper limbs and other parts of body)
- the urge to move or unpleasant sensations disclose or worsen during rest or inactivity (eg. Lying, sitting)
- the urge to move or unpleasant feelings disappear completely or partially during the movement, for example. Walking and stretching, at least as long as the operations are performed,
- urge to move or unpleasant sensations are more pronounced in the evening and at night than during the day or only occur in the evening or at night (in severe cases intensification of symptoms at night may not be noticeable, but should be in the past).

The basis for the treatment of RLS is to compensate deficiency states occurring in a patient, stabilize the weight of the patient receiving dialysis and physiotherapy. In the absence of the effect of pharmacotherapy includes the use of formulations nieergotaminowych dopamine agonists (ropinirole, pramipexole, rotigotine), and receptor agonists a2d (gabapentin). Selection of a drug is determined by the coexistence of the diseases [11].

Insomnia is a sleep disorder consisting in the occurrence of sleep ensure an appropriate rest or difficulties in initiating or maintaining sleep [24]. Its consequence is worsening functioning during the day and reduced quality of life.

Insomnia is diagnosed based on the presence of one of the three symptoms:

- difficulty sleeping,
- frequent waking up at night and difficulty falling asleep again,
- waking up early.

If these symptoms occur at least three times a week, for at least a month this point to the short-term insomnia. In the case of the presence of more than three months we speak of chronic insomnia [24]

The diagnosis of insomnia is crucial to subjective assessment of sleep quality and impact assessment on the functioning of symptoms occurring in the patient during the day. The scope of this information can be extended and revised in the objective study using polisomnografu.

The treatment starts with the type of insomnia, determine whether the circumstances are dependent on the state of health of the patient, his living conditions, lifestyles and habits. Eliminating factors dependent patient should precede the introduction of pharmacotherapy, psychotherapy and other treatments for sleep disorders.

Excessive daytime sleepiness(EDS, excessive daytime sleepiness) in dialysis patients is the consequence of insomnia, restless leg syndrome and obstructive sleep apnea syndrome [25]. The diagnosis of EDS uses the Epworth Sleepiness Scale (ESS). This questionnaire is used to assess the severity of sleepiness occurring in a subject during the day in case of: 1) a seat and reading, 2) watching TV, 3) a seat in a public place, eg. Theater, 4) as a passenger car going without interruption over an hour, 5) lying in the afternoon, 6) a seat and talk, 7) a seat after dinner, 8) sitting in a car that stopped in traffic for a few minutes.

Drowsiness intensity is determined in a scale of 0-3. Score > 9 points to EDS [26]. In the treatment of EDS is crucial causal therapy, removal of the band, which led to its development.

Summary

Sleep disorders in patients on chronic dialysis are common, but the scale of the problem is still not determined. Sleep disorders are both quantitative and qualitative. They involve a number of negative consequences in the realm of mental and somatic health of the patient, the overall quality of life. They heighten the already increased in the population of dialysis patients cardiovascular risk. Accordingly, it is important that early diagnosis and treatment of sleep disorders in patients on dialysis. Periodic assessment of the quality of sleep a patient receiving dialysis should be included in the standard therapy.

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