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MULTIDISCIPLINARY CARE OF OSTEOPOROSIS

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Abstract: Osteoporosis is a disease characterized as the most common of the osteometabolic system today, with its progressive increase occurring predominantly in the elderly, causing prolonged immobilization in them, thus evidencing the increase in fractures in these patients. The objective of this study was given in the perception of the osteoporosis theme, where it has a breadth of knowledge, from its prevention, conception to the restoration of the patient's health, passing through numerous specialties in the health area. The bibliographic survey was carried out in consultation with academic works, Scielo and Google Scholar. The search in the database was carried out in the period 2019-2021, considering the use of Portuguese as a search descriptor: osteoporosis, causes, prevention, diagnosis and treatment. The multidisciplinary study on osteoporosis was important for the composition and exploration of this research, since there is a multidisciplinary approach to osteoporosis care with many analogies focusing on care, pre- and post-discovery of the disease and even living with osteoporosis.

Keywords: Osteoporosis care, diagnosis and treatment in osteoporosis, osteoporotic patient.

INTRODUCTION

Known as decreased bone mass, vulnerabilizing and disrupting bone microarchitecture leaving this system susceptible to fractures affecting about 200 million people, mainly postmenopausal women and the elderly in general (BASTOS, et al. 2019).

In a comparison between the formation of the bone structure and its resorption, it declines in a negative perception, with greater probability from the age of 65, which can trigger the appearance of pathologies such as osteoporosis. (ALMEIDA, 2019).

Individuals with the elderly (elderly) are more prone to frequent accidents such as falls, a situation that at this age can be catastrophic given the fragility of the body, in particular the bones, with chronic pain that permeates throughout the body with outbreaks in the hip and spine (SOARES, ANDRADE, 2019).

This disease is characterized as the most common of the osteometabolic system today, with its progressive increase occurring predominantly in the elderly, causing prolonged immobilization in them, thus evidencing the increase in fractures in these patients, which ends up being one of the diagnostic investigation parameters, the that can permeate for years to trigger the result, causing a long delay for such identification (POUBEL, MARCOS, CARVALHO, 2019).

According to data from the IBGE - Instituto Brasileiro de Geografia e Estatística, there is a decrease in the fertility rate, which may cause a smaller number of young people under 14 years of age, and in 2031 there must be more elderly people compared to young people in this age group and with the increase in life expectancy of the Brazilian population increasing every year, it is estimated that in 2043 the elderly population, which today is around 29 million, will double (SILVA, 2019).

There is still no basis or a method that can have an accuracy of bone strength, however the diagnostic method of dual energy radiological absorptiometry represented by the acronyms of DEXA, has been considered the "Gold Standard" method, in vivo the reference exam. which estimates bone density at approximately 70% of bone strength (ALVES, 2020).

The objective of this study was based on the perception of the theme osteoporosis, where it has a breadth of knowledge, from its prevention, conception to the restoration of the patient's health, passing through numerous specialties in the health area, such as articles on physiotherapy, nursing, nutrition, education

physics, dentistry and radiology, in the care of patients with osteoporosis.

MATERIALS AND METHODS

The study presented was developed with the help of bibliographic research, it was composed of already published works that are synthesized and generate conclusions about osteoporosis and the relationship between prevention, diagnosis and treatment.

The bibliographic survey was carried out in consultation with academic works, Scielo and Google Scholar. The search in the database was carried out in the period 2019-2021, considering the use of Portuguese as a search descriptor: osteoporosis, causes, prevention, diagnosis and treatment.

The bibliographic research in specialized articles referring to osteoporosis in the multidisciplinary scope and thus contributing to the academic environment in order to demonstrate how this pathology has a breadth of knowledge and guidelines for its care.

AGING

Life expectancy is increasing, providing an aging population worldwide with an estimate for the period from 2020 to 2030, so this decade is considered as the one of population aging (FONTANA, OGATA, 2021).

The pathologies considered to restrict human longevity in the last century were infectious, which were worsened by basic population conditions such as transportation, sanitation, sedentary lifestyle, high-calorie foods, alcoholism and smoking (POUBEL, MARCOS, CARVALHO, 2019).

Fractures are injuries frequently caused in human beings and can occur due to countless situations, major impacts or low-intensity traumas, such as a slip and support with the hand or even a fall from one's own height, occurring at all ages, however, the great concern is when this fall is increased by

advanced age with osteoporosis, which makes it more vulnerable and prone to fractures due to small impacts (CÂMARA FILHO, ALMEIDA, 2019).

In a proportion of individuals by sex, based on age with a variation between 60 and 80 years, female individuals are four to eight times more likely to get the disease than male individuals, within that percentage, women are more susceptible to osteoporosis. This possibility only occurs due to the period in which the woman begins to have a decline in hormone production causing a physiological lack of control where the specific tendency is to decrease the production or stop producing estrogen, a fundamental hormone for bone formation and that helps in the calcium absorption (COSTA, PAZ, ALMEIDA, 2020).

Normally this disease is related to women, however it also affects men and in this case the relationship is with the deficiency in the male hormone testosterone linked to aging, with ages normally over seventy years old, it is recommended that all men take the test. bone densitometry (BASTOS, EMORE, CRUZ, 2021).

OSTOPOROSIS

Considered as a public health issue, in Brazil alone, osteoporosis has reached approximately ten million people on an annual average, however, special attention must be paid to the various areas of knowledge in the health areas as a whole focused on osteoporosis and to analyze well the level of knowledge of professionals in these areas of knowledge regarding this pathology (BASTOS, EMORE, CRUZ, 2021).

Osteoporosis does not present obvious signs and symptoms, the pathology research needs to be carried out with a good anamnesis, a kind of questionnaire to obtain more specific information about the patient's life, helping the doctor in the diagnosis, thus

knowing more about the patient's history. If, in this investigation, the main risk factors are evidenced, such as fractures and curvature of the spine, examinations are indicated so that the diagnosis can be confirmed, such as bone densitometry, laboratory tests, radiographs and bone markers. (COSTA, PEACE, ALMEIDA, 2020).

Osteoporosis is an advanced and irreversible stage, that is, it is a pathology that has no cure, however osteopenia is a condition of attention for the individual who has it, it already determines a decrease in the bone matrix where the patient must stay on alert because there is still the reversibility of the diagnosis and the lack of attention in this situation can lead the individual to the emergence of osteoporosis (NASCIMENTO, 2021).

Considered as a metabolic osteopathy, a pathology considered as a generalized disorder of the skeleton, with a considerable loss of bone mineral density, this bone being fragile and susceptible to fractures characterized mainly by the decrease of the cellular matrix of the bone, having a decrease in the production of osteoblasts, cell with the purpose of producing and regenerating the bone cell matrix, and on the other hand in an increase in osteoclastic cell production that has the purpose of destroying the bone cell matrix (SOARES, ANDRADE 2019).

A metabolic disease that affects the bone system leaving the bones fragile and increasing the chances of fractures after a decrease in bone tissue (SANTOS, 2020).

Concern about osteoporosis must start in childhood, with adequate nutritional habits, and with physical activities, common conventional exercises, remaining during adulthood until reaching older ages (OLIVEIRA, MELO NETO, PAULINO, 2019).

ANATOMOPHYSIOLOGY

Locomotion, support, protection and even metabolism, are basic functions of bone tissue, and act as a reservoir of calcium and phosphorus, which store and/or release ions in body fluids, maintaining a constant concentration of ions, human beings have their bone tissues remodeled, that is, renewed countless times throughout life, this remodeling has four phases, activation, resorption, reversal and formation, with the active participation of osteoblasts and osteoclasts, occurring on the bone surface as shown in figure 1 (SANTOS, 2020).

The bone matrix is formed by protein, cellular and mineral elements, where they have crystals that are formed by phosphorus and calcium, thus representing a percentage of 99% of all the calcium in the body and 80% of the phosphorus in the body (PONTES, 2019).

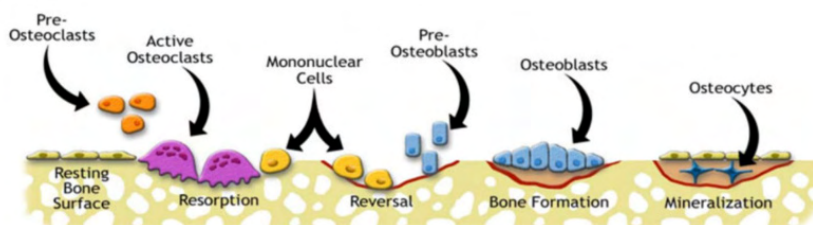


Figure 1: Bone remodeling process

Source: SANTOS, 2020

The bone mass structure increases at a rate of 40 times from birth to adulthood where it reaches the peak of bone mass, determined by the approximate age between 16 and 24 years, this bone mass normally reaches this peak in female individuals more briefer than in males. These bones have important functions in the human body as they form the structural architecture of the body, serve as protection for organs and storage of minerals (ALAMEIDA, 2019).

FACTORS

There are numerous factors that can trigger osteoporosis such as a sedentary lifestyle and low calcium intake, however women in the menopause period have a greater risk of developing osteoporosis, at this stage there is an exponential drop in hormone production, estrogen is a good example of these hormones and its absence causes low bone mass (OLIVEIRA, SINICO, 2020).

It is vital for a healthy bone life to have calcium intake early in life, as a form of disease prevention, however we have factors such as continuous use of cigarettes, lack of physical activity, not enough calcium and vitamin intake D (POUBEL, CS, MARCOS, CARVALHO, 2019).

The male individual has a greater tendency to gain bone mass at puberty with a small percentage of loss. In females in the post-menopausal period, this period goes through a decrease in estrogen production, with an increase in cellular activity in osteoclasts, losing bone mass. And after the approximate period of 50 years they tend to lose muscle strength in the proportion of 10 to 20%, making them vulnerable to impacts causing fractures (ALMEIDA, 2019).

Bone mass loss may be related to overweight linked to visceral fat, there is a likelihood of the patient's weight increasing and thus compromising bone mineral health, resulting

in low bone mineral density (DELACOSTA, 2019).

CONTROL

Because it is a silent disease, osteoporosis is difficult to identify and has no cure to date, however there are these treatments to control the pathology, and in this case the main objective is always the prevention of fractures and care, especially in women in the third age (COSTA, PAZ, ALMEIDA, 2020).

Every individual must consume at least 1,000 milligrams of calcium per day, in the case of elderly men, adolescents in puberty, women in pregnancy or breastfeeding, and post-menopause, they must consume about 1,200 to 1,500 milligrams/day (POUBEL, MARCOS, CARVALHO, 2019).

Physical activity is vital in all research related to prevention, control and treatment against osteoporosis, as it directly helps bone strengthening, and hormone replacement in post-menopausal women, however these replacements alone for treatment are no longer very efficient, the good use of bisphosphonates and are drugs that act to decrease resorption helping bone formation (COSTA, PAZ, ALMEIDA, 2020).

DIAGNOSIS

Within the diagnostic exams aimed at osteoporosis, specifically bone densitometry is considered as a reference in standard of diagnostic result, because the equipment has a technique known worldwide as DEXA - dual energy radiological absorptiometry that is of a low dose energy. radioactive, and still manages to demonstrate reference values in important places associated with osteoporotic fractures (NASCIMENTO, 2021).

The exams issued by the bone densitometry equipment compare average values in several parameters such as the

reference with young adults, to the peak bone mass per g/cm² (NASCIMENTO, 2021).

The W.H.O. - World Health Organization, in 1994 defined the criteria for the diagnosis of osteoporosis considering the values expressed by the Bone Densitometry equipment by DEXA, evaluating the T-Score considered as the reference value of the bone density of the patient compared to people of the same age group (young adult), sex and ethnicity. emitted by the device after evaluating the BMD - Bone Mineral Density of a young adult individual in a study under the criteria of the SD - Standard Deviation expressed by the equipment (PONTES, 2019).

Within the context of bone mineralization, the diagnosis of osteoporosis predicts risk factors for osteoporotic fractures, considered as the best tool for a diagnosis of this disease, bone densitometry using the DEXA equipment can determine the declining curve of bone mass alerting for a pathological onset of the disease (SILVA, 2019).

Studies carried out by the Brazilian Society of Rheumatology focused on the diagnosis and treatment of osteoporosis in men, it is recommended that after the osteoporotic diagnosis the individual must undergo laboratory tests in which the serum dosage of calcium and phosphorus, creatinine, alkaline phosphatase, liver function test, thyroid function test (TSH and free T4) dosage of vitamin D, total testosterone, complete blood count and urinary calcium dosage. In order to identify and warn about secondary conditions for bone loss and susceptibility to osteoporotic fractures (BASTOS, EMORE, CRUZ, 2021).

Within dentistry there are studies that determine the research for the detection of osteoporosis through the mandibular cortex in radiographs with radiomorphometric studies, however so far these researches need to be compared with exams performed by the DEXA equipment - dual energy radiological

absorptiometry, still considered the more effective for the diagnosis of osteoporosis (ALVES, 2020).

The values emitted by the DEXA equipment for the diagnosis of osteoporotic disease are expressed as follows, when presented T-Score values equal to or greater than -1.0, the diagnosis must be as SD - Standard Deviation, Normal, T-Score values Score expressed between -1.1 and -2.4, the diagnosis must be as PD, osteopenia, with T-Score values equal to or less than -2.5, as shown in table 1 (PONTES, 2019).

	T - SCORE
NORMAL BONE	Over -1,0
BONE IN OSTEOPENIA	Between -1,1 and -2,4
BONE IN OSTEOPOROSIS	Less than -2,5

Table 1: BMD classification according to DEXA T-Score (According to W.H.O. - World Health Organization).

Source: PONTES, 2019

TREATMENT

Estrogen when replaced working properly has the function of absorbing calcium in the intestine, with this the loss of calcium through the urine ends up lowering, and prevents bone loss with the stimulation of calcitonin (OLIVEIRA, SINICO, 2020).

Treatment can be active and even preventive against osteoporosis, and it is important to emphasize measures that can be used in a preventive way for bone degradation, involving food with calcium intake, with milk and derivatives, which are a source of calcium along with vegetables. color, avoid smoking and alcohol intake, moderate exposure to ultraviolet rays to stimulate and produce vitamin D (COSTA, PAZ, ALMEIDA, 2020).

FINAL CONSIDERATIONS

The construction of this article related to the areas of physiotherapy, nursing, nutrition, physical education, dentistry and radiology, form important for the composition and exploration of this research, since there is a multidisciplinary approach to osteoporosis with many analogies focused on in care, pre and post discovery of the disease and even in living with osteoporosis seeing that curability is unfeasible after the diagnosis is confirmed, leaving only the monitoring of the disease, because as it is chronic, the purpose after confirmation of the diagnosis is to minimize the effects and control the advance.

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