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The Impact of Osteoporotic Fractures on Patients with Rheumatoid Arthritis in Work Disability

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Abstract

BACKGROUND: Osteoporosis is the one of most common chronic metabolic bone disease, which is characterized by increased bone fragility, which is highly affected by age and menopause. According to the International Osteoporosis Foundation, one in three women over the age of 50 experience at least once in a lifetime a fracture as a result of osteoporosis, which, on another hand, is a cause for work disability.

AIM: The purpose of the study is to evaluate the economic and social impact of work disability, which caused by fractures as a result of osteoporosis on patients with rheumatoid arthritis (RA).

MATERIALS AND METHODS: The study included 50 patients, diagnosed with RA and osteoporosis, which have had at least one fracture during their course of disease. The data were obtained in the Regional Hospital of Elbasan and the main focus was the duration of work disability.

RESULTS: The research concluded that approximately 20% of the patients required a long-term disability benefit after suffering a fracture. Furthermore, the majority of the patients were reluctant to go back to work after suffering the consequences of the fracture, mainly due to pain and inability to properly move.

CONCLUSION: Fractures due to osteoporosis on patients with RA have an increasing impact in work disability and life quality. The majority of the patients taken into research have benefited from work disability policies, whether short- or long-term.

Introduction

Rheumatoid arthritis (RA), a systemic autoimmune disease that firstly affects the synovial tissues, is one of the most depleting types of arthritis affecting approximately 1–2% of the world population. RA creates inflammation, stiffness, pain, edema, and disability of the joint, thus limiting mobility in the affected joints and restricting individuals with RA the capability to do basic daily activities [1], [2], [3]. The onset of RA is predominantly during middle age, although reports have also showed the development of RA at a younger age [4], and the incidences of RA are 3 times more often in women than in men [5].

Patients with RA are at risk of osteoporosis and fractures [6]. Clinical studies have indicated that the incidence of osteoporosis among RA patients is 1.9 times higher than among those that have not RA [7]. Bone loss in RA has been connected with many variables as follows: Chronic inflammation, use of glucocorticoids, and physical inactivity. Pro-inflammatory cytokines as interleukin-1, and tumor necrosis factor-α can create a massive production of osteoclasts, thus breaking the balance between bone resorption and bone production [8]. Oral glucocorticoids that were mostly used to suppress inflammation of RA, can stimulate the loss of bone mass by suppressing the differentiation and process of osteoblasts to (BMP-2) [9] or the Wnt/beta-catenine pathways [10], [11]. Meanwhile, immobility coming from muscle pain of RA, weakness, and edema can raise the risk of falling [12], [13], and raising the level of bone fracture. The mortality rate from osteoporotic fractures is higher than any other mortality including cervical cancer or breast cancer [14]. Therefore, the study of osteoporosis and osteoporotic fracture in RA patients is important for the early prevention of bone fracture.

Numerous observational studies have been connected patients with RA with the increased risk of osteoporosis fracture affecting mostly the hip or vertebral [15].

Definition and Measurement of Work Disability

Work disability is a major consequence of RA [16]. Although RA is cumulative over time, 20–30% of patients become permanently work-disabled in the

first 2–3 years of the disease [17]. Rapid remission in the early disease appears to be a beneficial strategy against work disability in RA [18].

The availability of biologic agents during the past decade has led to expectations of reduced work disability rates in RA [19], according to observations in clinical trials [20].

The risk of work disability among patients with RA is connected not only with traditional radiographic, and laboratory targets of disease process and gravity but as much or more with demographic, socioeconomic, functional, and social policy variables [16]. Although work disability is one of the most important outcomes in RA, cultural and economical differences between societies [21] may affect its value as an outcome measure (Figure 1).

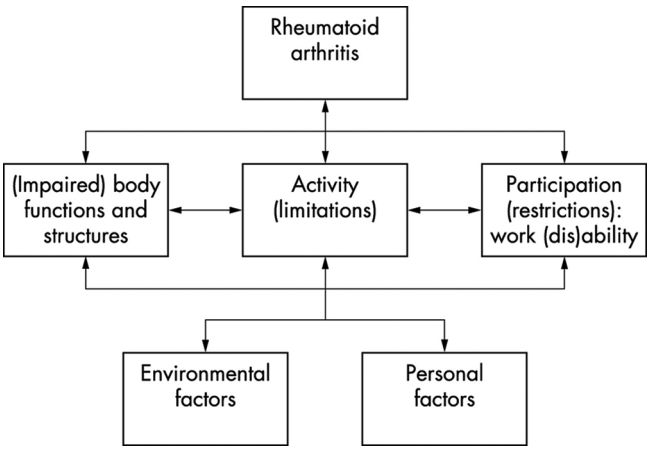

Figure 1: Scheme applied to work disability in rheumatoid arthritis [22]

Results

A total of 50 individuals with RA at Regional Hospital of Elbasan were studied, of which 44 are female and six of them are male. The average age of patients is 55.8 years. To study, the social effect of advanced RA among patients was included two variables: Education and Work Category. About 80% of patients were with middle-term education and 20% with high-term education. From them, 87% referred to make a physical work and 13% a mental work.

For the period of onset of symptoms, patients referred to their onset on average 10 years ago. For the time of the first spontaneous fracture, patients referred on average more than 2 years ago.

To study the connection between levels of disease inflammation and work disability erythrocyte sedimentation rate (ERS), FR and C-reactive protein (CRP) were taken as reference.

The mean FR reference values for patient at the time of visit were 52 UI/mL. The lowest value was 12 UI/mL and the highest value was 105 UI/mL. The mean ERS reference values for patient was 36 UI/mL. The lowest value was 10 UI/mL and the highest value was 70 UI/mL.

Reference values of CRP on average for patient at the time of visit was in the range of 15.67 mg. The lowest value resulted 0.1 mg/L and the highest value resulted 150 mg/L.

The average pain scale among patients was seen to be 8 von 10. Second, loss of joint function is considered another frequent response from 10/50 patients conducted in study. That shows that work disability comes as a direct process of osteoporosis that coexists in 20% of these patients with the current disease of RA.

From 50 studied patients who had suffered at least one spontaneous fracture during the course of the disease, it was concluded that the highest frequency of these fractures occurred after the 3rd year of the disease.

Another studied variable considered very important in relations between fractures and RA was body mass index (BMI). The average BMI level in this group was 30.2.

The average time of work disability was concluded to be more than 21 days, where 57% had low economical income, low professional outcome, and high psychological problems as anxiety and depression periods.

Conclusion

There is a evident relation between fractures and RA resulting in work disability of the studied group. There is a predominance of women in relation to men in terms of the frequency of fractures, mainly after the age of 50 also as a result of hormonal changes. Second, another relation was observed in direct proportion between high BMI and fractures in RA, where 60% had a BMI of 30.2. The third studied factor is social factor such as mainly physical work that increases the predisposition for more pain, joint stiffness, and consequently more incidence of fractures. A correlation was observed between the inflammatory target factors ERS, FRH, and CRP, but this correlation was not found to be consistent enough to make a generalization. Among 20% of patients, it was observed that they had received a report of work disability for more than 21 days. About 46% of them reported that they were not sure if they could continue working due to the exacerbation of the diagnosis.

Recommendation

It is recommended that this study be extended to all patients currently with RA in QSUT and in primary

medical service. It is recommended to create an accurate database for the data of patients with RA that had at least once fracture and are in treatment to be followed in dynamics every 6 months or 1 year.

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