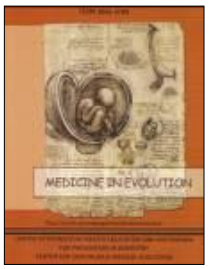
# QUALITY OF LIFE IN PATIENTS SUFFERING FROM SECONDARY OSTEOPOROSIS DUE TO SERONEGATIVE SPONDYLOARTHROPATHIES




**L. CATAN[1], D. NEMES[1,2], E. AMARICAI[1], D. POPA[1,2], G. PUENEA[1], D. TANASIE[1]**

1. **"Victor Babes" University of Medicine and Pharmacy, Timisoara, Romania;**
2. **City University and Emergency Hospital, Timisoara, Romania-Rehabilitation and rheumatology department**

## ABSTRACT

***Aim and objectives**: To point out the importance of complex treatment in patients suffering from secondary osteoporosis due to seronegative spondyloarthropathies.*

***Material and methods**: During a one year period we studied 128 patients suffering from secondary osteoporosis due to seronegative spondyloarthropathies divided into two homogenous groups. Group 1 followed medical treatment of the primary rheumatic disease and anti-osteoporotic therapy, while group 2 followed in addition a home-adapted kinetotherapy programme. Each patient was assessed 7 times (complex clinical examination, laboratory tests for inflammation, disease activity score, functional score and quality of life scale).*

***Results**: We noticed an increased BMD, normalisation of inflammation tests at 12 weeks, no progression of radiological aspects and a better quality of life in group 2 patients.*

***Conclusions**: Medical therapy of seronegative spondyloarthropathies including anti-osteoporotic treatment combined with an individualized home-adapted programme improves quality of life and increases BMD.*

***Key words**: osteoporosis, seronegative spondyloarthropathy, quality of life*

Correspondence to:

*Liliana Catan;*
*Adress: Victor Babes University of Medicine and Pharmacy, Timisoara, România*
*Phone: +40721790980*
*E-mail address: lilicatan@gmail.com*

## INTRODUCTION

Osteoporosis (OP) is a frequently encountered extra-articular disease in patients suffering from seronegative spondyloarthropathies. It is already present in the early stages of the primary disease. In parallel with the excessive bone proliferation, a bone loss is also noticed. That leads to a high risk of fractures [1], the inflammatory activity of the primary disease having a major role in the pathogenesis of osteoporosis [1, 2, 3]. The bone mineral density (BMD) can reflect the inflammatory activity of seronegative spondyloarthropathies [4].

The bone mineral density (BMD), determined by dual-energy X-ray absorptiometry (DXA), is a sensitive and objective method for an early diagnosis and for assessment of disease progression in seronegative spondyloarthropathies [5]. In patients with moderate or severe primary rheumatic disease, the BMD measured by X-ray absorptiometry at hip and lumbar spine (L3 level) through lateral projection (a more sensitive exposure) or anterolateral projection reflects osteopenia or osteoporosis, while the calcium homeostasis markers (calcium, magnesium, creatinine, phosphor, parathyroid hormone and testosterone), the bone formation markers (alkaline phosphatase, osteocalcin and carboxy-terminus procollagen of type-I collagen) and the bone resorption markers (acid phosphatase, carboxy-terminus telopeptide of type-I collagen, pyridilone and urinary deoxypyridilone) have normal values [6].

It is known that low values of BMD measured by DXA are found in male patients suffering from seronegative spondyloarthropathies, especially in the cortical bone. The most sensitive region seems to be the femoral neck, followed by the L1-L4 spinal column and the first proximal third of the distal radius [7].

Secondary osteoporosis in patients suffering from seronegative spondyloarthropathies represents a real public health concern because of an increased risk of fractures and a weaker quality of life with important socioeconomic results. All of these imply the necessity of an early diagnosis and a complex therapy of the primary rheumatic disease, as well as of the secondary osteoporosis.

## THE AIM OF THE PAPER

1. To point out the importance of a complex, sustained and long-term treatment (both medical and physical) in order to achieve an increase of BMD in patients with secondary osteoporosis due to seronegative spondyloarthropathies.
2. The increase of quality of life in patients with secondary osteoporosis due to seronegative spondyloarthropathies by using home-adapted, intensive, sustained and individualised physical therapy programmes.
3. The assessment of the way in which a home-adapted physical therapy programme can influence quality of life and patients' compliance to the treatment.

## MATERIAL AND METHOD

During a one year period (between February 2010 and February 2011) we studied a number of 128 patients diagnosed with secondary osteoporosis

due to seronegative spondyloarthropathies. Seventy-two patients were diagnosed with ankylosing spondylitis, 32 patients with psoriatic arthropathy, 16 patients with reactive arthritis and 8 patients with Crohn's disease. The initial mean T-Score, determined by DXA, was of -3.4±0.4. Eighty-eight of the patients (68.75%) were women and 40 patients (31.25%) were men, aged between 28 and 67 years. The patients were divided into two homogenous groups that followed a group differentiated therapy, namely:

**Fig.1** Home-adapted kinetotherapy program in a group 2 patient

*Group 1* followed both a complex medical treatment of the primary rheumatic disease and an anti-osteoporotic treatment (16 patients took risendronic acid, 16 patients took zolendronic acid, 16 patients took ibandronic acid) associated with Ca+Mg+D3 3 times per week + Alpha D3 (1µg tablet), 1 tablet 3 times per week;

*Group 2* followed the same medical treatment as group 1 patients. Besides, each group 2 patient required a home-adapted, intensive and sustained physical therapy programme (figure 1) for one year. This programme had the following objectives: pain relief, prevention or correction of postural changes, improving functional parameters (muscle strengthening, range of motion, coordination, control and equilibrium in order to prevent falls).

All patients needed 7 assessments, namely at the beginning, monthly for the first 3 months, at 6 months, at 9 months and at 12 months. Each assessment consisted of a complex clinical examination, inflammation laboratory tests (ESR, C-reactive protein), disease activity measurement by using BASDAI scale (Bath Ankylosing Spon-

dylitis Disease Activity Index) [8], functional assessment using the BASFI scale (Bath Ankylosing Spondylitis Functional Index) [8, 9], quality of life assessment by using the HAQ (Health Assessment Questionnaire) [10, 11, 12] and spinal, sacroiliac and peripheral joints X-rays, as well as DXA measurements at the beginning and at the end of the 12 months study.

## RESULTS

The complex assessments have pointed out the following results:

1) A significant increase of BMD scores in group 2 patients after one year of specific therapeutic approach. The initial T-Score in group 2 patients was of -3.4±0.4 and the final T-Score was of -2.1±0.2, while the initial T-Score in group 1 patients was of -3.4±0.4 and the final T-Score was of -2.6±0.3 (figure 2).

2) Normalization of inflammation tests at 12 weeks (fig.3) and no progression of radiological images at one year after starting the therapy in group 2 patients.

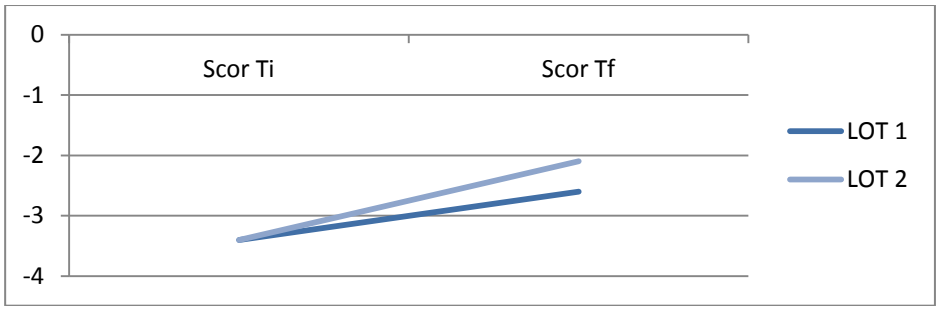



**Fig.2** Graphic representation of median T-Score at BMD measurement in the two study groups

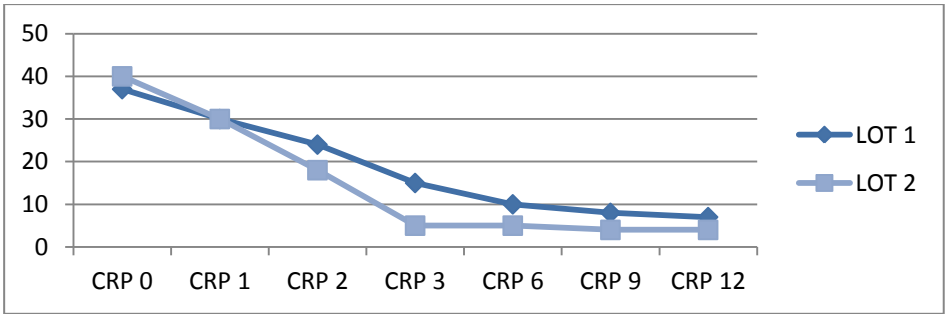



**Fig.3** Graphic representation of median C-reactive protein (mg/l) in the two study groups

3) A better quality of life in group 2 patients at 12 weeks after starting the therapy.

The HAQ scores increased with more than 50% (table I, fig.4), while BASDAI and BASFI scores (table II, fig.5 and table III, fig.6) decreased with more than 50% with no need for a higher drug dosage.

4) The patients that followed an anti-osteoporotic treatment with bisphosphonates had a higher increase in BMD in comparison with the ones treated with strontium ranelate.

**Table 1** Median HAQ (Health Assessment Questionnaire) scoresin the two study groups

| GROUP | HAQ 0 | HAQ 1 | HAQ 2 | HAQ 3 | HAQ 6 | HAQ 9 | HAQ 12 |
|---|---|---|---|---|---|---|---|
| GROUP 1 | 8 | 11 | 12 | 12 | 18 | 20 | 22 |
| GROUP 2 | 7 | 12 | 13 | 15 | 21 | 25 | 28 |

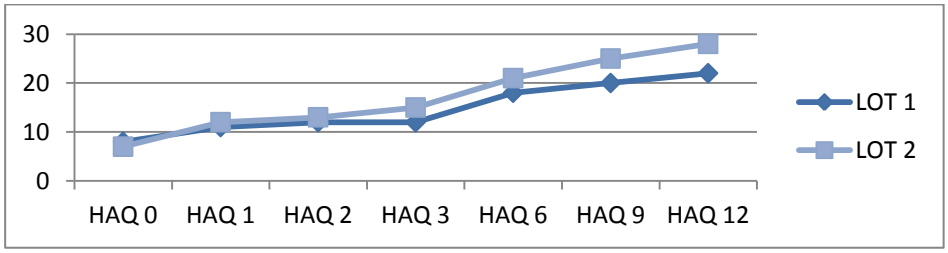



**Fig.4** Graphic representation of median HAQ (Health Assessment Questionnaire) scores in the two study groups

**Table 2** Median BASDAI (Bath Ankylosing Spondylitis Disease Activity Index) scores in the two study groups

| GROUP | BASDAI 0 | BASDAI 1 | BASDAI 2 | BASDAI 3 | BASDAI 6 | BASDAI 9 | BASDAI 12 |
|---|---|---|---|---|---|---|---|
| GROUP 1 | 6.9 | 6.5 | 5.8 | 4.9 | 4.3 | 4.1 | 3.8 |
| GROUP 2 | 7.4 | 6.4 | 3.4 | 2.8 | 2.0 | 1.8 | 1.3 |

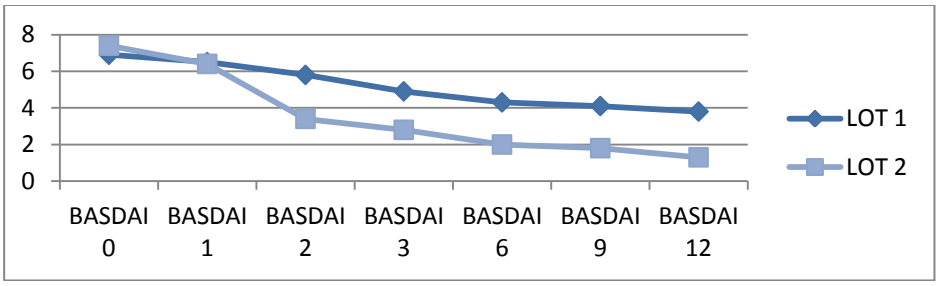



**Fig.5** Graphic representation of mean BASDAI (Bath Ankylosing Spondylitis Disease Activity Index) scores in the two study groups

**Table 3** Median BASFI (Bath Ankylosing Spondylitis Functional Index) scores in the two study groups

| GROUP | BASFI 0 | BASFI 1 | BASFI 2 | BASFI 3 | BASFI 6 | BASFI 9 | BASFI 12 |
|---|---|---|---|---|---|---|---|
| GROUP 1 | 6.8 | 6.0 | 5.5 | 4.0 | 3.8 | 3.8 | 3.4 |
| GROUP 2 | 7.0 | 6.1 | 4.8 | 2.8 | 1.6 | 1.5 | 1.3 |

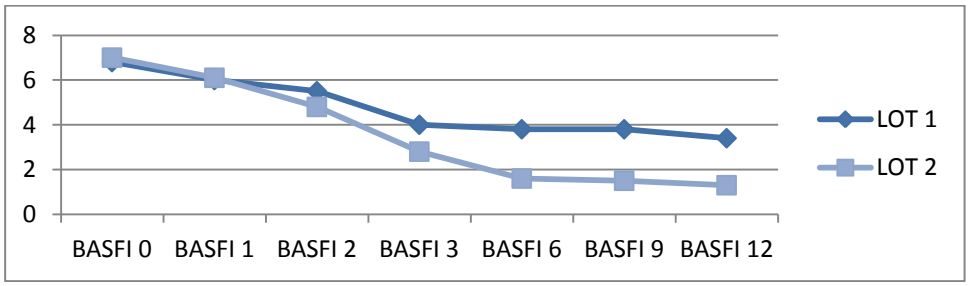



**Fig.6** Graphic representation of mean BASFI (Bath Ankylosing Spondylitis Disease Activity Index) scores in the two study groups

## CONCLUSIONS

The medical therapy of seronegative spondyloarthropathies, including an anti-osteoporotic treatment for the secondary cases of osteoporosis, combined with a home-adapted, intensive and individualized physical therapy programme significantly improves the quality of life and increases the BMD in these patients, thus reducing the risk of fractures. The clinical, functional and laboratory parameters obtained after one year of a home-adapted individualized physical therapy programme performed in group 2 patients makes us to support the role of a specific, long-term kinetotherapy in order to influence the primary rheumatic disease activity, probably through the activation of some antiinflammatory and disease modifying factors.

## REFERENCES


1. Wendling D- Bone loss in ankylosing spondylitis: Can we put the puzzle together, J. Rheumatol. 2005, 32:1184-1186
2. Toussirot E, Wendling D- Bone mass in ankylosing spondylitis, Clin. Exp. Rheumatol. 2000, 18 (suppl 21): S16-S20
3. Schett G, Landwer R, van der Heijde D- Tumor necrosis factor blockers and structural remodeling in ankylosing spondylitis: what is reality ant what is fiction? Ann Rheum. Dis 2007, 66:709-711
4. Kim HR, Kim HY, Lee SH- Elevated serum levels of soluble receptor activator of nuclear factor kappa B ligand (sRANKL) and reduced bone mineral density in patients with ankylosing spondylitis, Rheumatol. Oxford 2006, 45:1197-1200.
5. Wendell D. Bronson- Bone mineral density and biochemical markers of bone metabolism in ankylosing spondylitis, The Journal of Rheumatology, volume 25,1998, NR. V, MAY, p. 929-93512.
6. M. Norgaard- Bone mineral content in ankylosing spondylitis measured with dual x-ray analysis, The Journal of Rheumatology, volume 25, 1998, NR. VIII, AUGUST, supliment - OP 2.3
7. W.M. Montenegro Tores- Evaluation by dual x-ray absorptiometry (DXA) of bone mineral density (BMD) in ankylosing spondylitis (AS) patients, The Journal of Rheumatology, volume 25,1998, NR. VI, June, supliment- T 106
8. Popescu R., Trăistaru R., Badea P. Ghid de evaluare clinică şi funcţiona in recuperarea medicală. Editura Medicală Universitară Craiova, 2004, ISBN 973-7757-03-3.
9. Zimmerman G. M., Savage M. L., Chandler D. C., Maccarone Bonfigli M. Psoriatic arthritis and psoriasis-2005
10. Nemes I.D.A., Drăgoi M., Pătru Reghina, Vasilie D. "Spondilartropatiile seronegative - ghid de diagnostic şi tratament", Editura Orizonturi Universitare, Timişoara, 2000
11. Ramey D., Fries J., Singh G.- Quality of Life and Pharmacoleconomics in Clinical Trials, 2nd ed., The Health Assessment Questionnaire 1995- Status and Review. Philadelphia: Lippincott-Raven Pub.1996, p.227-237
12. Kiltz U, van der Heijde D. Health-related quality of life in patients with rheumatoid arthritis and in patients with ankylosing spondylitis. Clin Exp Rheumatol. 2009 Jul-Aug; 27(4 Suppl 55):S108-11.