EVALUATION OF CHRONIC LOW BACK PAIN IN OSTEOPOROTIC PATIENTS IN TREATMENT WITH TERIPARATIDE

ABSTRACT

Objective: The objective was to assess the improvement of chronic low back pain in osteoporotic patients treated with teriparatide (TPTD). Methods: This was an observational study with a convenience sample of 21 patients with osteoporosis using TPTD. 20 mcg/day, between 2006 and 2010, with chronic low back pain (more than three months). Dorsolumbar radiographs and bone densitometry (DXA) were performed before and after treatment. For pain measurement the VAS pain scale was used. Data were entered in Excel and processed in STATA/SE 8.0 with Chi² or Fisher (p < 0.05). Results: twenty-one patients aged 40-90 (mean 70 years), eight (40%) had senile osteoporosis and thirteen (60%) had osteoporosis secondary to medications. Seventeen (80%) had previous dorsolumbar fractures. Ten (47.5%) used TPTD for 24 months, six (27.5%) used it for 18 months, four (20%) for 12 months and one (5%) for 6 months. Conclusion: There was a significant reduction in the severity of low back pain with the use of TPTD (initial mean VAS: 7.3, final VAS: 2.6, improvement: 4.7).

Keywords: Low back pain; Teriparatide; Osteoporotic fractures.

INTRODUCTION

Osteoporosis is a metabolic bone disease that is chronic, multifactorial, generally asymptomatic, and related to the progressive loss of bone mass and to fractures. It has been defined as the “Epidemic of the 21st Century”, due to the increase in life expectancy and the aging of the world population. Concerns about the prevention, diagnosis and treatment of osteoporosis began in the 1960s and today the disease is considered a public health problem.
Dequeker et al.² showed vertebral fractures from osteoporosis in the radiological studies of Egyptian mummies from about 2000 B.C. In the United States, $20 billion/year are spent on the treatments for the 1.5 million fractures attributed to osteoporosis, almost half of them (700,000) located in the spine (osteoporotic vertebral compression fractures – OVCF).³ Considering the low priority given to metabolic bone diseases, it is estimated that the prevalence of osteoporosis will double by 2020.⁴

Teriparatide (TPTD) is a bone tissue-forming anabolic agent derived from the molecule of the parathyroid hormone (1-34 rhPTH), and has been used in the treatment of patients with severe osteoporosis. Neer et al.⁵ observed that after treatment of osteoporosis with TPTD, patients had partial improvement in chronic low back pain (up to 30%) as a secondary outcome, probably related to a decreased incidence of the OVCF. More recent studies have also demonstrated a statistically significant reduction in the frequency and severity of low back pain after treatment with TPTD.⁶⁻⁷

The aim of our study was to evaluate improvements in chronic low back pain in osteoporotic patients treated with teriparatide.

METHODOLOGY

In an observational study with a convenience sample, 21 patients were evaluated who had severe osteoporosis treated with teriparatide, using 20 micrograms per day, with subcutaneous administration, with at least six months and at most 24 months of medication use. The study was conducted at the Clínica de Ortopedia e Fraturas (COF) in Goiânia, GO, Brazil, in the period from 2006 to 2010.

The selected patients had chronic low back pain (over three months) with severe pain even after 90 days of medical treatment consisting of analgesics, anti-inflammatories, opioids, antiresorptive agents, calcium, vitamin D, and spinal orthoses.

Exclusion criteria were: 1) patients who required surgical treatment of the OVCF before the treatment with teriparatide was initiated, 2) or who have had to suspend teriparatide before six months of usage for any reason.

All patients were subjected to radiographs of the lower back and bone densitometry (DXA) before and after treatment with teriparatide, in the same apparatus (a Lunar DXA). To evaluate the improvement in pain, a visual analogue scale (VAS) was used at baseline and after treatment with teriparatide, with 0.0 representing no pain, and 10.0 the worst pain possible.

Teriparatide was indicated according to the criteria of Bilezikian⁹ from 2004: 1) a DXA with T-score < 3.0, 2) patients over 70 years, 3) multiple fragility fractures, 4) chronic use of corticosteroids, 5) no response to antiresorptive agents (fractures or low bone mass).

The database was built using Excel. Data analyses were processed in STATA/SE version 8.0. A descriptive analysis (absolute and relative frequencies) was performed to characterize the behavior of the studied variables, and the Pearson’s chi-square test or Fisher’s exact test was used to verify the existence of an association between them. A significance level of 5% (alpha = 0.05) was used in all tests, and tests with p < 0.05 were considered to be statistically significant.

RESULTS

Twenty-one patients were evaluated, 20 women and one man, aged between 40 and 90 years (mean of 70 years), with only two smokers. (Figure 1)

Of the 21 patients, eight (40%) had senile primary osteoporosis and 13 (60%) had osteoporosis secondary to medications (corticosteroids or anticonvulsants for more than a year). Seventeen (80%) had dorsolumbar fractures prior to treatment, diagnosed on radiographs, and the evolution of which was better characterized by magnetic resonance imaging (MRI) through the presence of bone edema. (Figure 2)

With respect to the period of teriparatide use, 10 (47.5%) patients were in treatment for 24 months, six (27.5%) for 18 months, four (20%) for 12 months, and only one (5%) for six months. (Figure 3)

Of the 21 patients studied, only eight (40%) had prior treatment with antiresorptive agents, but showed no clinical improvement. After treatment with teriparatide, 13 patients (60%) had a bone mass gain measured by DXA between 0% and 9%, whereas eight (40%) had a gain of between 10% and 15%. (Figure 4)

With respect to pain relief, the mean initial VAS of patients was 7.3 (ranging from 5 to 9), and the final mean was 2.6 (ranging from 1 to 5), showing a significant improvement of 4.7 (p < 0.05). (Figure 5)
CONCLUSION
The study showed a statistically significant reduction in the severity of low back pain after treatment with teriparatide at a dose of 20 mcg/day subcutaneously. With respect to pain relief, the mean initial VAS of patients, which was 7.3 (range 5-9), lowered to 2.6 (range 1-5) in the final assessment, showing an improvement of 4.7 (p < 0.05).

All authors declare no potential conflict of interest concerning this article.