Vertebral fragility fractures and balance disorders: postural evaluation

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INTRODUCTION

Osteoporosis is a systemic bone disease characterized by bones resistance alteration and increased fractures risk.

Several clinical trials show that dorsal-vertebral fragility fractures produce balance alterations.[1]

Posture is defined as the body position in the space and the spatial connection between skeletal segments, with the role to maintain balance (antigravitational function), in static and dynamic conditions. Balance is the correct connection between the subject and the surrounding environment.[2]

Neuro-physiological, biomechanical, emotional, psychological and relational factors have an important influence in posture assessment and balance maintenance, because of the universally recognized role of "polisensorial system".

The aim of our study is to evaluate the postural static and dynamic assessment of subjects affected by osteoporosis with almost 2 vertebral fragility fractures and previous breast or prostatic cancer in pharmacological blocking hormonal therapy.

MATERIALS AND METHODS

We led a longitudinal preliminary study with postural static and dynamic evaluation before (T0) and after (T1) rehabilitative treatment on 30 patients (25 women and 5 men between 55 and 75 years old) affected by osteoporosis with almost 2 vertebral fragility fractures in pharmacological therapy with Denosumab and Vitamine D. The patients have been selected in Metabolic Bone Diseases Clinic of Physical Medicine and Rehabilitation Department and they have been evaluated in Vestibology and Auditive Electrophysiology Laboratory of Audiology Department of University Hospital "P. Giaccone" in Palermo between September 2018 and March 2019.

Inclusion criteria: osteoporosis with ≥ 2 vertebral fragility fractures; adequate linguistic comprehension. Exclusion criteria: impossibility to walk, medium and/or external ear cancers, infections, otosclerosis, active Meniere Disease, sudden hearing loss, EVA syndrome, ponto-cerebellar tract cancers; cognitive loss, neurological diseases, severe psychiatric diseases.

All the selected subjects underwent physiatric, audiological and postural evaluation by baropodometric platform (FreeMed®Dynamic and its software freeStep®), evaluation scales (Mini-OQLQ, NRS, SF-36, tinnitus VAS and DHI-I). After the evaluation patients were divided in to 2 groups: group A with vestibular pathology and group B without it. Successively all patients begin a rehabilitative project-program of 10 daily group treatments (3 patients each group) of postural reeducation for Group B and additional vestibular reeducation for Group A.

RESULTS

The preliminary data analysis shows an objective efficacy of rehabilitative treatment on balance and postural stability, on pain and quality of life in both groups with statistically significant values for group B. It is very interesting to observe the improvement of Range of Motion and emotional status with decreased levels of anxiety and stress.

CONCLUSIONS

The bibliographic research show insufficient longitudinal clinical trials about postural disorders in people with osteoarticular diseases useful to produce generalized data. Nonetheless the National Posture Institute[3] underlined the necessity of personalized programs for postural rehabilitation.

Preliminarily we can affirm that the rehabilitative treatment produces a relevant improvement of clinical conditions of the patient, of correct posture assessment and balance maintenance, reduction of pain level, improvement of Range of Motion and quality of life with the important factor of sharing their own discomfort produced by the pathology with other people in the same condition within the therapy group.

Bibliography

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