COMPLEX MANAGEMENT OF FRAILTY FRACTURES – CASE REPORT

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COMPLEX MANAGEMENT OF FRAILTY FRACTURES – CASE REPORT (Abstract): Frailty fractures encompass pelvic ring fractures in the elderly - a condition more frequently encountered in women, usually with pre-existing osteoporosis. The incidence of these fractures is increasing, following the increase in average life expectancy. Most of the times, they are the result of a minor injury, of which the patient has little or no recollection; the clinical signs and symptoms, radiological changes and the degree of fracture stability vary greatly. As such, there is a wide range of therapeutic options and one of the most important decisions for the physician is choosing between surgery and conservative treatment. We present the case of an elderly female patient with multiple pelvic ring fractures, and a medical history of cardiovascular disease and osteoporosis; the orthopedic examination recommended conservative treatment which was carried out in the Geriatric Clinic of the “Dr. C.I. Parhon” Hospital. Following the complete physical examination and through geriatric evaluation, a complex therapeutic plan was devised, which included: recovery through physiotherapy, adequate nutrition, psychological support, treatment of the cardiovascular comorbidities and prevention of the consequences of extended bed rest. The treatment lasted for 60 days and the outcome was favorable: decreased bone frailty, mainly through preserving muscle tone and osteoarticular function, correction of malnutrition, improvement of depression and partial recovery of patient’s mobility; the results of our therapy made it possible for the patient to return home, where she leaves alone. She will need help with daily household chores, but she intends to continue the recovery therapy as means of increasing her quality of life and independence. Keywords: FRAILTY FRACTURES, SENIOR PATIENTS, RECOVERY THERAPY.

As the elderly segment of the population increases, so does the incidence of geriatric syndromes. Consequently, their impact on the medical services is more and more taxing, especially in the case of osteoarticular conditions that are associated with an increased risk of falling. Most frequently, patients with osteoporosis experience either hip or pelvic ring fractures (1). Pelvic ring fractures in the elderly are considered among frailty fractures (2) and are usually encountered in women over the age of 80. The gender-specific incidence has a different pattern according to age - from 0.54/0.38 ‰ for patients aged 65-69 to 9.35/4.45 ‰ for ages over 90; also, inci-
Evidence is higher for institutionalized or moderately disabled persons (3). Most often, pelvic ring fractures in the elderly are the consequence of a minor injury - either same-level fall at home or during the bed to chair transfer. Frequently, these fractures occur on an osteoporotic bone. Both pre-existing comorbidities and the clinical consequences of the fracture (significant pain, total immobilization, and dependency) darken the prognosis and require a thorough assessment prior to a therapeutic decision (3). There is no consensus regarding the orthopedic approach: surgery versus conservative treatment, both being associated with considerable risks (4, 5).

We present the case of an elderly female patient with multiple pelvic ring fractures, for whom a conservative treatment was recommended. She was subsequently transferred to the Geriatric Clinic of the “Dr. C.I. Parhon” Hospital for a concomitant cardiovascular complication. The comprehensive geriatric assessment and the therapeutic plan, which were managed by a multidisciplinary team, led to the satisfactory recovery of the patient and allowed her to return to her own home.

**CASE REPORT**

We present the case of an 80 year-old female patient, living in an urban house, who was admitted to the Orthopedics Department with multiple pelvic ring fractures (fracture of the anterior left acetabular wall without displacement, left ischiopubic fracture, sacral wing fracture) following a minor fall injury at home (fig. 1). She had a recent medical history of arterial hypertension (for which she was prescribed treatment with ACE inhibitors) and osteoporosis. During hospitalization, a routine cardiology consultation revealed an episode of tachyarrhythmia (high frequency atrial fibrillation).

![Fig. 1. The X-ray of the patient showing multiple pelvic ring fractures (fracture of the anterior left acetabular wall without displacement, left ischiopubic fracture, sacral wing fracture).](image)

Due to the recently-diagnosed cardiovascular comorbidities and because the fractures were stable (no associated displacement), the orthopedic surgeon opted for conservative treatment, despite the fact that the fractures had occurred on a pathologic bone. The patient was transferred to the Geriatric Clinic for a thorough assessment prior to her discharge at home.

On admission, the patient had significant pain in the lumbosacral and pelvic areas, with partial bed immobilization (she could turn from one side to the other), mildly elevated blood pressure, psychomotor agitation, anxiety, and depression. Additional investigations did not identify other medical conditions except for the previously diagnosed arterial hypertension. Comprehensive geriatric assessment revealed: malnutrition (21/30 MNA score), complete dependency (assessed by ADL and IADL scales), moderate depression (assessed by the GDS scale), clinical frailty (assessed by the Freid scale) and the absence of cognitive disorders.
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(assessed by the MMSE scale). Both a physiotherapist and psychologist consulted the patient and participated in developing the management plan.

The therapeutic approach of the multidisciplinary team focused on the following points: ensuring careful monitoring of the cardiovascular status, providing an appropriate diet for malnutrition, osteoporosis and heart disease, securing an immediate, suitable and continuous functional recovery, offering psychological counseling and qualified care to prevent complications of prolonged bed rest. Special attention was given to functional recovery, due to the complexity of the case. The treatment plan had to take into account the fact that fractures occurred on osteoporotic bones (6), that the orthopedic treatment consisted in relative bed rest (no cast immobilization and no stepping on the affected leg for 60 days), and that the patient wanted to return as soon as possible to her home, where she lived alone.

One of the most important roles was played by the physiotherapist, who had to attempt meeting the following aims:

a. decrease the pain that occurred mainly during the recovery sessions, but also while performing the smallest movements in the bed;

b. recovery, restoration and consolidation of the affected motor functions, correct and full recovery of force and joint mobility, muscle strength recovery in both upper and lower limbs (7);

c. restoration of stability, controlled movement and ability for body support when the patient began to walk using the frame, crutches and, at the end, the cane, with gradual and correct resumption of independent walking;

The procedures used to accomplish the set goals were:

- electro acupuncture at acupoints in the painful area for instant pain relief, resulting in greater amplitude of the movements during passive, active-passive and active physiotherapy;

- sedative and relaxing therapeutic massage, which resulted in a significant decrease of pain. This procedure also had a positive mental effect on the patient, who’s compliance during treatment increased; active involvement of the patient augmented the beneficial effects of physiotherapy, with excellent results despite osteoporosis and old age (which, usually, is a hindrance in the recovery dynamic);

- massage and reflexotherapy, which determined a growth in basal metabolic rate, stimulating respiratory and circulatory apparatus functions, improving sleep quality and the person’s general state;

- breathing exercises and bilateral posterior chest massages in order to avoid bedsores and, more importantly, to prevent decubitus pneumonia.

Recovery treatment was gradually more complex. As the fracture consolidated, the pelvic member on the fracture’s side was loaded progressively and the use of the thoracic limb was encouraged (8). The patient’s relative bed rest lasted for 3 weeks as per orthopedic recommendations for stable fractures. At the beginning of the third week, the patient sat up at the side of the bed, and, by the fourth week, she managed standing up and performing short movements (without pressuring the affected limb), with the help of an attendant and the walking frame, which enables good control of body weight distribution and center of gravity adjustment. At the same time, improvement of the nutritional status, decreased anxiety and depression, and
efficient control of blood pressure values were achieved. 60 days after the injury, the patient was discharged with a relative dependency status (walking by cane) and need of in-home help.

**DISCUSSIONS**

Given the improved life expectancy, the rising incidence of osteoporosis and frailty inevitably led to an increase in pelvic ring fracture rates, which are considered frailty fractures. They typically involve elderly females (over 80 years old), are diagnosed after a minor injury (sometimes the patient does not remember when the trauma occurred) and have disastrous consequences for the patient and their caregivers: prolonged bed rest with severe deterioration of the muscles, joints and bones associated with increased dependency level (in some cases, institutionalization is needed due to the inability to return home). This represents an important health care burden both from a social and an economic point of view (9).

Conservative treatment, which is preferred in the stable fractures of patients with clinical frailty, cardiovascular comorbidities, accelerated osteoporosis and malnutrition is associated with a long period of immobilization and bed rest, and, inevitably, all its complications. The complex treatment (physiotherapy, psychotherapy, proper nutrition and continuous medical monitoring), performed in a specialized medical unit, is the main step towards therapeutic success, allowing complex patient recovery and restoring quality of life.

Because the Romanian health care system lacks specialized centers for complex recovery of the elderly, this program was implemented at the Geriatric Clinic, where constant supervision and medical care, nutritional counseling, psychological assistance and a thorough physiotherapy schedule, together with patient’s compliance and her wish to return home, led to the recovery of walking ability, with a significant decrease of the dependency level, and allowed for a quality of life status similar to that prior to the fracture.

**CONCLUSION**

Pelvic ring fractures in the elderly are considered among frailty fractures because they are usually encountered in women over the age of 80. There is no consensus regarding the orthopedic approach: surgery versus conservative treatment, both being associated with considerable risks. The particularities of old and very old age (frailty and osteoporosis, the tendency to malnutrition, depression and cognitive impairment, the concomitant chronic diseases) need a comprehensive geriatric assessment performed by a multidisciplinary team who is well trained to devise a complex recovery plan, performed in a specialized clinic and which would allow the patient to return, as much as possible, to the way of life that existed prior to fracture.

**REFERENCES**


**NEWS**

GINGIVAL, PLASMA AND SALIVARY LEVELS OF MELATONIN IN PERIODONTALLY HEALTHY INDIVIDUALS AND CHRONIC PERIODONTITIS PATIENTS: A PILOT STUDY

Melatonin (N-Acetyl-5-hydroxytryptamine) is an indole amine hormone synthesized predominantly by the pineal gland. Extrapineal synthesis and release of melatonin can occur from organs like ovaries, retina, gastrointestinal tract and also from cells such as human lymphocytes. Melatonin regulates circadian rhythm and the biological clock in the human body. In addition, it performs numerous other functions like immunomodulation and osteopromotion. Melatonin has potent antioxidant action against reactive oxygen species and can mitigate deleterious effects of free radical damage in the human body. It is well known that chronic periodontitis is an inflammatory condition of the tooth supporting structures with a microbial aetiology, in which dysregulated immune response and a jeopardized oxidant-antioxidant balance play a major role in causing tissue destruction and tooth loss. Previous studies have shown increased oxidative stress markers and lowered antioxidant status in periodontal disease compared to health. In this context, the presence of melatonin as an antioxidant in saliva and plasma and its association with the pathogenesis of chronic periodontitis has been researched. It has been hypothesized that salivary melatonin can act as a potent local antioxidant boosting the defence mechanism against periodontal pathology. Till date no study has investigated, melatonin levels in the gingival tissue. This study demonstrates the presence of melatonin in gingival tissue. Furthermore, melatonin levels are lowered in gingival tissues of chronic periodontitis patients (Balaji TM, Vasanthi HV, Rao SR, et al. Gingival, Plasma and Salivary Levels of Melatonin in Periodontally Healthy Individuals and Chronic Periodontitis Patients: A Pilot Study. Journal of Clinical and Diagnostic Research. 2015, Vol-9(3): 23-25).

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