The Greek challenging reality of fragility fractures and inspirations for the future

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ABSTRACT

A different type of pandemic has been challenging the last decades the global health care systems. These are the fragility fractures, which are linked with increased morbidity, mortality and impairment of the quality of life of the elderly. National health care systems are burdened with treating these demanding patients, consuming large amounts of resources, financial and medical. This fact has led to the need for more optimal utilisation of the existing resources.

Patients with fragility fractures have multiple co-morbidities and optimally they need a multi-disciplinary approach for their management. For this a team of healthcare professionals has to be formed, involving orthogeriatricians, orthopaedics, physiotherapists, anaesthetists, nurses, dieticians and many more. Another important aspect of this problem is the primary and secondary prevention of the fragility fractures, mainly by diagnosing and treating the osteoporosis and preventing the falls of the elderly population.

The Fragility Fracture Network is a global organisation with the vision to create a society where the elderly receives high quality care and have improved quality of life. Its aim is to spread the information and the means to achieve this goal globally. In the present article we discuss all of these aspects focusing on the local challenges of the Greek health care system and present some inspirations for the future.

KEY-WORDS: Fragility fractures, Osteoporosis, Orthogereatrics, Falls prevention, multidisciplinary approach

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The Challenge

The challenge that the health care professionals face in the modern health care is the increasing number of patients with fragility fractures. These fractures are always associated with osteoporosis, recurrent falls and the increasing age of the global population.

Osteoporosis is a condition where the bone density is reduced and the micro-structure of the bones is disrupted, leading to increased risk of fracture (1) (2).

Fragility fractures are low energy fractures, usually caused by simple falls. The bone due to osteoporosis is mechanically weak and breaks with minimal force, force that under normal circumstances would not cause a fracture.

Older studies shown that in the developed world, one in three women and one in five men, aged over 50 years, will sustain at least one fragility fracture during their remaining lifespan (3). A recent study conducted in six different European countries, shown that during 2017, 2.7 million fragility fractures occurred. Two thirds of these fractures occur in women and through projections the total number of fragility fracture is expected to raise by 23% by 2030 (4). Fragility fractures can occur in several parts of the skeleton with most common site being the fractures of the femoral neck (19.6%), vertebrae (15.5%), distal radius and proximal end of the humerus (17.9%) (4).

Fragility fractures are linked with increased morbidity and mortality, hospital readmissions, further fractures which are linked with increased financial and social burden around the world.

Primary prevention of fragility fractures includes population screening, diagnosis and treatment of patients with osteoporosis associated with increased risk of fracture. International associations such as IOF (International Osteoporosis Foundation) are updating frequently their guidelines. In Greece similar associations such as ELIOS (Greek Institute of Osteoporosis) and EEMMO (Greek Association of Bone Metabolism), update regularly the guidelines for the Greek population (5,6).

The diagnosis of osteoporosis is established with the measurement of the bone density, but for the start of appropriate anti-osteoporotic therapy the health care professional has to consider also other parameters such as the vitamin D levels, other medical conditions which affect the bone quality or the tendency and frequency of falls and the possible co-existing sarcopenia. Consequently, all patients with osteoporosis alongside with the anti-osteoporotic medication need to receive guidance for good nutrition and physical activity. Their medication for other medical conditions has to be reviewed as well, as some medication could be the cause factors for frequent falls.

Despite the increasing awareness globally about the importance of osteoporosis prevention and the devastating effects of fragility fractures, many studies around the world have shown that a really significant presentence of patients with fragility fractures do not receive treatment for osteoporosis or even never tested for (4,7–9). This significant treatment gap is present in Greece as well, as similar conclusions were drawn from studies of the Universities of Larissa and Thrace (10,11). These facts illuminate the need to increase the awareness of the medical professionals and the public about the importance of the osteoporosis screening and treatment. For this goal the role of the general practitioners and the family doctors is of paramount importance to raise the awareness of the public.

Another layer of the present challenges is the secondary prevention of these fractures. The health care professionals who are treating these patients with fragility fractures have to be vigilant and not lose the opportunity to start the anti-osteoporotic therapy even after the first fracture, preventing a future one.

The biggest challenge is the treatment of patients with fragility fractures of the hip, as these fractures are the most frequent and need increased resources to treat. These patients have multiple comorbidities and they are usually frail. Only a small fraction of them are fit, well and independent (12,13). Consequently these patients are more likely to develop complications, delayed rehabilitation and even increased mortality (14–17). Similar are the results in the Greek literature, with fragility fracture patients being significantly impaired pre-operatively lead-

ing to poor clinical outcomes (18,19).

Many of the hip fractures patients need readmission to the hospital following treatment for fragility hip fractures, either due to worsening of their medical conditions or due to a new fragility fracture (20–22). Unfortunately a second fragility hip fracture is linked with increased mortality (23). It is evident that there is a need of a multidisciplinary approach to the treatment of these patients, with the view of a holistic approach of their medical conditions.

Inspirations

The fragility fracture network (FFN) is a global scientific organisation with the vision to develop a community where patients sustaining a fragility fracture, receive high quality standard treatment for the fracture, have standardised enhanced rehabilitation and continue their life with high quality without new fractures.

The aim of this network is to organise and improve the health care systems across the globe and promote the multi-disciplinary approach of these frail patients. Another aim of the organisation is to draw the attention of the health care professionals to the secondary prevention of the fragility fractures.

The Greek chapter of the fragility fracture network has the same vision and aims of action. According to the recent global call to action, we are all asked to contribute to the improvement of the care of the patients with fragility fractures using a multi-disciplinary approach to their treatment, based on the four base pillars of the FFN (24).

Pillar I: Multi-disciplinary approach of the patients with fragility fractures combined with orthogeriatric management.

Pillar II: Good rehabilitation after the treatment of the fragility fracture with the view to return to as normal activity levels as possible, independence and high quality of life.

Pillar III: Secondary prevention of new fragility fractures following a fragility fracture, by preventing new falls and improving the bone health of the patients.

Pillar IV: National collaborations and change of politics.

Pillar I: Multi-disciplinary approach of the treatment of fragility fractures

The traditional approach of patients with a fragility fracture depends on the type of fracture. This includes fractures that are treated conservatively and they do not need to be admitted in the hospital or they need operative treatment with short in-hospital stay. Usually these are fractures of the distal end of the radius, the proximal end of the humerus and the vertebral fractures. These type of fracture have low morbidity but present an important 'opportunity' to the health care professionals which has not to be lost. In addition to the fracture treatment the treating doctors can act accordingly in order to reduce the risks of a new fragility fracture.

Fragility fractures of the hip are treated surgically either with internal fixation of the fractured bone or with replacement of the head of the femur. Both have the intention to allow immediate unrestricted mobilisation of the patients. After the arrival of this type of patient in the hospital they should not stay longer than needed in the emergency department for unnecessary investigations or laboratory tests. The patient should be transferred to the wards as soon as safely possible, and depending on the medical co-morbidities, physical examination, blood test and other investigation results, an effort for medical optimization should be made. At the same time important interventions should be made such as the administration of the necessary fluids, the appropriate analgesia, the control of the cognitive state and the prevention of delirium.

Patients with hip fractures should be treated surgically as soon as possible and ideally within the first 36 hours of hospital admission. Any delay of surgery is linked with increased morbidity and mortality (25). If this goal is not achieved, in some healthcare systems the ministry is removing the founding to the hospitals. In order to achieve this goal in Greece, it is obviously necessary to inform and raise awareness to all involved parties on the treatment of these patients.

The treatment team of these patients includes traditionally the orthopaedic surgeons, the anaesthetists, the nurses, the physiotherapists and doctors from other specialties only when called. This is the current situation in many countries and also in Greece, while during the last decade this has changed in other countries. Based on what was previously mentioned regarding the condition of these patients (co-existing diseases, multiple drugs, possible sarcopenia or malnutrition, cognitive disorders etc.) it is obvious that in the treatment team other specialties should be involved as well, such as pathologists, psychiatrists, physiatrists and other health care professionals such as psychologists and dietitians. Systematic geriatrician or ortho-geriatrician involvement in the management of these patients both pre- and post-operatively has been implemented in some countries the last few years with very good results. In countries where the geriatrics as subspecialty is practically non-existent, this role can be fulfilled by internal medicine doctors. Their role can be of paramount importance for treating and preventing complications.

Pillar II: Rehabilitation of patients with fragility fractures

The rehabilitation of the patients following a fragility fracture has the aim to help the patients achieve independent function and good quality of life. Unfortunately, this cannot be achieved in all the patients, as the functional status of the patients before the fracture is most of the times the intended goal of the rehabilitation. Especially for the patients with hip fractures the rehabilitation should start immediately after surgery with the view of long-term good outcomes.

Early rehabilitation is defined as the rehabilitation that happens during the hospitalisation in the acute hospital, but the rehabilitation does not stop there. Each patient should be included in an individualised long term rehabilitation program, according to the individual patients' needs. Of course, the rehabilitation of a patient following a hip fracture should not be focusing only on the mobilisation of the patient, but on an overall rehabilitation of the patient, according to their needs. The ultimate goal should always be a good functional outcome and a good quality of life. The lack of rehabilitation medicine physicians and physiotherapists in the Greek healthcare system and the community, is making the situation even more challenging. Also, sometimes the patients may need special arrangements inside their housing or even be treated in specialised rehabilitation centres, which unfortunately are not enough throughout the country.

Pillar III. Secondary prevention of fragility fractures

Patients who sustained a fragility fracture are at high risk of sustaining a new one. Especially the first two years after the first fracture the risk is significantly greater (4,9,22).

These patients after the treatment of the first fracture (operative or conservative), should be checked and treated for underlying factors that led to the fragility fracture in the first place, such as osteoporosis, recurrent falls or visual impairment. This is called the secondary prevention and it is evident that this will need a multi-disciplinary approach as well. Unfortunately, in most countries there is a significant deficit in this approach, causing a significant treatment gap (4,9).

The Fracture Liaison Service (FLS) aims to systematically implement the secondary prevention in all patients with fragility fractures (26). Different models of organising and operating these services have been introduced in different countries with the type A having the best results (27,28). This service aims to identify and register all patients who have sustained a fragility fracture. Then these patients are referred for testing and treatment, following with regular monitoring and continuation of treatment. Results from the implementation of such services have led to a reduction of a new fragility fracture (29).

Testing, monitoring and treating the osteoporosis should be as in the primary prevention, with special focus on the patients' compliance.

Emphasis should be given on the prevention of the falls, as a fall is what will eventually lead to the fracture. Therefore, it is necessary to control and intervene at the causes of the falls. The falls may be related to neurological diseases, vision problems, sarcopenia or specific medication. Pre-

venting the unnecessary polypharmacy can be the first step of reducing the falls (removing unnecessary medication or replacing with others with less side effects).

Sometimes modifications in the patient's home micro-environment may be necessary, to make it safer for their daily living. Removal of obstacles, carpets or adjustments of steps may be needed, alongside with special exercise and strengthening rehabilitation programs (30,31).

Pillar IV. Change of national politics

It is evident that for the implementation of the above three pillars many changes in the national healthcare systems should be made. Especially in our country many changes have to be made in the core of the healthcare system, such as the implementation of the geriatric specialty, the establishment of the Fracture Liaison Service, the improvement of the community services and the education of physiotherapists.

As members of the national fragility fracture network, we have the obligation to inform and educate ourselves and our work partners in the healthcare structures. Ultimately, sooner or later the diffusion of the idea will bring the intended results locally. This will eventually raise the awareness to the government as well, to make the necessary changes in the system itself, with the ultimate goal being to create a community where the older people receive high quality care with less fragility fractures and overall, a better quality of life.

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