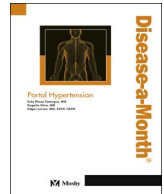




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## Foot disorders in the elderly: A mini-review

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### ABSTRACT

Ageing process is associated with changes to the aspect, biomechanics, structure and function of the foot, it may be related with a marked presence of foot conditions, pain, disability and other overall health problems that constitute a major public health concern.

Also, the prevalence of epidemiologic research found an incidence of foot problems which is even higher as a consequence of increasing life expectation. Several studies have also suggested that such foot disorders currently affect between 71 and 87% of older patients and are a frequent cause of medical and foot care.

Thus, these kind problems are extremely common conditions in the general population, especially in the elderly who are associated with poor quality of life, balance impairment, increase the risk of falls, difficulty on putting shoes, fractures, restrict mobility and performance of activities of daily living that turn can produce serious physical, mental and social consequences in the older people.

The role of the physician in the assessment, evaluation, and examination of foot problems is very important, yet it is often an overlooked and undervalued component of geriatric health care.

The purpose of this article is to review and to provide an overview of the most common foot deformities precipitating factors, clinical presentation, evidence-based diagnostic evaluation, and treatment recommendations with a view to preventing medical conditions or deformities affecting the feet that may alter foot condition and general health amongst the elderly.

### Introduction

Ageing process associated with changes to the aspect, biomechanics, structure and function of the foot,<sup>1–5</sup> it may be related with a marked presence of foot conditions, pain, disability and other overall health problems that constitute a major public health concern<sup>6,7</sup> and will escalate and other factors remain unclear in a population setting.

*Abbreviations:* AbH, Abductor Hallucis; AP, Anteroposterior; CSA, Cross sectional area; DIPJ, Distal interphalangeal joint; EHL, Extensor Hallucis Longus; FDB, flexor digitorum brevis; FHB, flexor hallucis brevis; HV, Hallux valgus; LTD, Lesser Toe Deformities; MTPJ, Metatarsophalangeal joint; MRI, Magnetic resonance imaging; PF, Plantar Fascia; PIPJ, Proximal interphalangeal joint; PHP, Plantar heel pain; ROM, Range of Motion; RUSI, Rehabilitative Ultrasound Imaging

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Thus, foot problems (FP) represent risk factors for the development of many significant complications of multiple systemic diseases such as depression, diabetes mellitus, high blood pressure, inflammatory arthritis, obesity, osteoporosis, stress and vascular alterations where the therapeutic goal is to relieve or eliminate symptoms, avoid complications and improve in the older people decreased sense of well-being and independence.<sup>8,9</sup>

Also, the prevalence of epidemiologic research found an incidence of FP with the age is even higher as a consequence of increasing life expectation and FP are a frequent cause of medical and foot care. The definition of a FP may also include a person's inability to maintain basic foot hygiene (eg, cutting toenails) or difficulty on putting adequate footwear.<sup>10,11</sup> Several studies have also suggested that such FP currently affect between 71 and 87% of older patients and are a frequent cause of medical and foot care.<sup>12-15</sup>

These conditions are multifactorial in origin and the clinical assessments reveal high incidence was the most common pathologies report include dermatologic conditions related with nail or keratotic pathologies, orthopedic deformities associated with lesser toe deformities, hallux valgus, tailor's bunions, abnormal medial arch structure, prominent metatarsal heads, pain, swelling, infections and circulatory disease.<sup>13,16</sup> These alterations have a greater impact on older people and are correlated with poor quality of life, balance impairment, increase the risk of falls, fractures, restrict mobility and performance of activities of daily living that turn can produce serious physical, mental and social consequences in the older persons.<sup>17-20</sup>

In recent years, there has been increased interest about the role of the physician in the assessment and examination of the aspect, biomechanics, structure and function of the foot and the understanding of the association of these structures to gait and ambulation that is very important, yet it is often an overlooked and undervalued component of geriatric health care. Studies have shown that with advancing age, there is a general tendency for the foot to exhibit increased pain tolerance, growth foot width and length, raised and atrophy soft tissue stiffness, a decreased range of motion, decreased strength and a more pronated posture as well as to function in a more pronated position with reduced joint mobility performance and less efficient propulsion when walking.<sup>1,3,21-25</sup>

However, little is known about the influence of foot deformities on risk of overall health being a principal component to improve life expectancy. Based on these antecedents, and taking into account the existence of a necessity, so far unattended, of attention and follow-up in foot care for elderly, it is important the role of the physician is to recognize and treat the underlying condition, prevent further injury, alterations, deformities and educate the patient about his/her disease to find a better quality of life, wellbeing and autonomy for older adults.

Finally, the purpose of this article is to review and to provide an overview the most common foot deformities precipitating factors, clinical presentation, evidence-based diagnostic evaluation, and treatment recommendations with a view to preventing medical conditions or deformities affecting the feet that may alter foot condition and general health amongst the elderly.

## Metatarsalgia

### Introduction

Metatarsalgia is one of the most common complaints in the foot and ankle. It is reported to comprise pain in the area across the plantar forefoot beneath the second, third, and fourth metatarsal heads. Pain in the foot unrelated to metatarsophalangeal joints (MTPJ) (such as Morton's neuroma) must be distinguished from disorders that lead to abnormal pressure distribution, reactive calluses and pain.<sup>26</sup> Metatarsalgias constitute one of the most frequent sore feet. Have different etiologies and could be defined as acute or chronic pain in connection with one or more MTPJ caused by damage (mechanical or other origin) anatomical structures that interact with the joint (bone, cartilage, capsule and ligaments, vessels, nerves, tendons, bursa and subcutaneous tissue, skin).<sup>27-30</sup> Nearly 80% of the normal population present some form of pain in the metatarsal region over their lifetime.<sup>31</sup> The prevalence is about 10% of the population, the female sex predominates.<sup>32</sup> Foot pain affects approximately one-third of community dwelling people over age 65.<sup>12</sup>

Pain in the forefoot or metatarsalgia is a symptom shared by various diseases. The anatomical pathology and knowledge that settle in that territory may allow better differentiation processes responsible.<sup>33</sup>

Foot pain may increase the risk of falls and decrease physical activity, causing a worse quality of life.<sup>34,35</sup> Reduction of physical activity has been shown to increase the mortality from all causes.<sup>36</sup> Regular daily walking is beneficial for health, leading to a longer life.<sup>37</sup>

It is considered a major health problem, especially in women, who make up 85% of all concerned. Gouty arthritis or rheumatoid can cause metatarsalgia involvement of, especially MTPJ and interphalangeal distal joints.<sup>12</sup>

The pain is located in the metatarsal area, in the forefoot and usually increases with pressure and support performed during standing and walking. They are often associated with biomechanical alterations to improper footwear or deformities such as hallux rigidus where you can submit transfer metatarsalgia pain along the side edge standing, trying to make progress shifting the burden of the first radius.<sup>38</sup> It is essential to locate the point where metatarsalgia is generated, it is an important fact to understand their cause. This condition is characterized as one of the most common symptoms in patients with FP. It has a prevalence of 10% in the general population, reaching 50-95% in older adults. It is also the most common cause of foot pain in middle-aged women, representing approximately 85% of all concerned.<sup>12,39,40</sup>

Metatarsalgias not only limited to pain plant can also be dorsal, lateral, medial or a combination thereof. The person often complain of pain in the area accompanied by hyperkeratosis, helomas (if by point pressure), toe deformities claw or hammer, subluxation or dislocation of the MTPJ or surgical iatrogenic.<sup>41</sup> Patients with mechanical metatarsalgias have pain forefoot plantar hyperkeratosis with regularly for the fulcrum of the metatarsal heads.<sup>42</sup>

Treatment strategies are guided by the multifactorial nature of metatarsalgia, which results from variable combinations of congenital, acquired, and/or iatrogenic factors. Surgery as a treatment for metatarsalgia remains controversial. The many available procedures range from extensive surgery to local intervention dictated by the symptoms and findings from the physical and

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