High Prevalence of Foot Problems in the Danish Population: - A Survey of Causes and Associations

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High prevalence of foot problems in the Danish population: - a survey on courses and associations

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Introduction

Previous epidemiological studies have shown a high prevalence of foot problems between 40-81% in the population (Garrow 2004). Foot deformities such as cavus foot and flat foot have been related to malalignment injuries in the foot, lower leg and more proximal parts of the locomotive system (fig.1). However, the association between foot dysfunction and malalignment injuries is still controversial (Nigg 2001).
Few population studies, however, have been random sample sizes and the associations between foot deformities have not until now been sufficiently examined. (Garrow 2004, Burzykowsky 2003, Badlissi 2005) This study may give at least in part answers to the questions of whether these associations exist.

Purpose

To examine 1-month prevalence of self-reported foot pain in a Danish population sample and describe location and disability associated with this. In addition associations between foot pain, foot deformities and pain in the lower extremity or back are described.

Methods

The postal questionnaire used in this cross sectional study was developed and tested in a pilot study. The questionnaire was mailed to 2100 participants in Aalborg County, Denmark. They were randomly selected from the Central Personal Register. Participants were between 18-80 years of age. The definition of self-reported foot deformities was based on three pictures of a neutral, a cavus and a flat foot. The primary outcome parameters were "foot pain in the last month", "foot deformities pes cavus (high arch) or pes planus (flatfoot)" and "pain in the lower leg, knee, hip or back within the last month". Logistic regression analysis was used for testing the association between foot pain, foot deformities and pain in the lower extremities or back. All tests were controlled for sex, age and BMI. Significance level was P=0.05.

Results

Compliance was 79.6 % (1671/2100). Participants were comparable to the Danish population with an average age of 46.9 yr. (46.1-47.7). 48.3 % were male participants. 10.7 % were obese (BMI>30).

- Prevalence of self-reported foot pain was 30.4 %
- Foot pain was most frequent in the forefoot (12.5 %) and ankle (11.7 %) (fig. 2).
- Pain in the foot, lower leg, knee, hip or back were observed with a prevalence of 56.0 %
- Foot pain is significantly associated with foot deformities, lower leg, knee, hip and back pain (P<0.001) controlled for sex, age and BMI.
- Prevalence of self-reported flat foot or cavus foot was 17.7%. Men showed a prevalence of 6.6 %/10.3 % respectively, and women 11.1 %/12.4 %.
- Foot deformities were not significantly associated with pain in the lower leg, knee, hip or back controlled for sex, age and BMI.
- Men with foot deformities have a significant higher risk of having foot pain compared to men without self-reported deformities OR=1.7 (1.1-2.5). Women with foot deformities are also at a significantly higher risk of foot pain OR=2.7 (1.9-3.8). High BMI is a significant risk factor for women OR=3.1 (1.7-5.6) for BMI>30 compared to BMI<20.
- 25.5 % of the participants reported at least moderate difficulties in performing daily activities because of foot pain.
- Pain in the lower leg, knee, hip or back are significantly worse compared to foot pain (P<0.001) measured as difficulties during daily activities.

Fig. 1

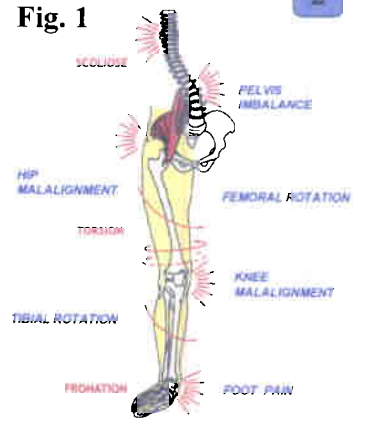
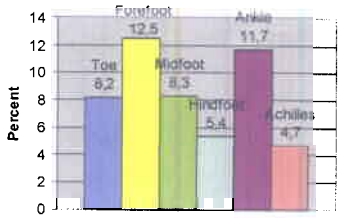


Fig. 2 *Location of self-reported foot pain among 1671 randomly selected subjects in Aalborg County, Denmark.*



Discussion

This cross sectional study confirmed a high prevalence of foot pain (30.4 %) and foot deformities (17.7 %) in the population.

Logistic regression analyses revealed a significant increase in foot pain among subjects with pain in the lower leg, knee, hip and low back controlled for sex, age and BMI.

The results confirmed the hypothesis that foot deformities are associated with foot pain, but the association does not exist in relation to pain in the lower leg, knee, hip or back.

We believe that foot examination should be part of every clinical examination whenever patients complaint of pain in the lower extremities or back. This study should be supported by objective examinations of foot deformities in a random sample preferably with a dynamic measure of foot deformities.

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References

Garrow AP et al. The Cheshire Foot Pain and Disability Survey. Pain 2004;110(1-2):378-84.
Burzykowsky T et al. High prevalence of foot diseases in Europe. Mycoses 2003;46(11-12):1000-4.
Badlissi F et al. Foot Musculoskeletal Disorders, Pain, and Foot-related Functional Limitation in older Persons. J Am Geriatr Soc 2005;53:1029-1033.
Bennett JE et al. Factors Contributing to the development of Medial Tibial Stress Syndrome in High School Runners. J Ort Sports Phys Ther 2001;31(9):504-510.
Nigg BM. The role of Impact Forces and Foot Pronation: A new Paradigm. Clin J Sport Med. 2001;11:2-9