

Variation in diagnosis and management of common foot problems by GPs

Kees Gorter, Saskia de Poel, Ruut de Melker and Marijke Kuyvenhoven

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Background. There are indications that the diagnosis and management of common foot problems vary widely in general practice.

Objectives. Our aim was to explore the variation of GPs' diagnosis and management of common foot problems and the possible correlation between GPs' characteristics and their competence to diagnose correctly.

Methods. In a cross-sectional design, 90 GPs in The Netherlands were invited to complete a questionnaire regarding seven vignettes with common foot problems (hallux valgus, hallux rigidus, fasciitis plantaris, tarsal tunnel syndrome, metatarsalgia, corns and calluses, and rheumatoid arthritis), combined with questions covering diagnoses, management options and some GP characteristics.

Results. A total of 72 GPs responded (80%). They most often diagnosed hallux valgus (79%) and rheumatoid arthritis (86%) correctly, and most often hallux rigidus (37%) and tarsal tunnel syndrome (74%) incorrectly. GP characteristics did not correlate with their competence in diagnosing. The most frequently suggested management was referral to a podiatrist. The referral rate to medical specialists was low, except in the case of rheumatoid arthritis (79%).

Conclusions. More than half of the GPs were competent in diagnosing vignettes of common foot problems. This diagnostic competence showed great variation and was not associated independently with GP characteristics. Educational programmes are recommended. Management showed less variation and often included referral to podiatrists. Further research into the effectiveness of specific treatments for different foot problems is recommended.

Keywords. Diagnosis, foot, general practice, management, vignette methodology.

Introduction

Non-traumatic musculoskeletal foot complaints are common and are mostly caused by problems such as metatarsalgia, hallux valgus and hallux rigidus.¹ The prevalence of foot complaints increases with age. It is ~20% in people of 65 years and older.^{1,2} Sixty per cent of these people seek (para)medical care,³ and half of them consult a GP. Foot complaints hamper mobility and cause a 2-fold increase in the risk of falls and fractures in the elderly.^{2,4} Foot dysfunction in younger individuals might reduce worker productivity and increases the risk of injury, which both may result in a decrease in quality

of life. The aim of the present study was to explore the variation of GPs' diagnoses and management of common foot problems, and the possible correlation between GPs' characteristics and their competence to diagnose correctly.

Methods

Physicians

All the 90 GPs in Apeldoorn (a town with 125 000 inhabitants in the eastern part of The Netherlands) were asked to complete a questionnaire on diagnosis and management of common foot problems. A vignette methodology was chosen because of the advantage in being able to examine and compare individual GPs' competence in the diagnosis and variation in the management of different common foot problems on the basis of identical and clearly defined diseases and patient characteristics.

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Julius Center for General Practice and Patient oriented Research, University Medical Center (UMC), PO Box 85060, 3508 AB Utrecht, The Netherlands.

Questionnaire and cases

The questionnaire covered seven common foot problems: hallux valgus, hallux rigidus, fasciitis plantaris, tarsal tunnel syndrome, metatarsalgia, corns and calluses, and rheumatoid arthritis (Fig. 1 and Appendix). The vignettes for corns and calluses, rheumatoid arthritis and metatarsalgia were accompanied by a photograph of the troubled foot; the others were not, since a photograph would not have added any necessary information. The GPs were asked to answer the following questions: (1) ‘What is your diagnosis?’ and (2) ‘What are you going to do?’ (Fig. 1) The questionnaire also included questions about the GPs’ characteristics such as sex, age and number of years in practice.

Classification of diagnosis and management

Two GPs and an orthopaedic surgeon rated the correctness of each diagnosis on a three-point scale: ‘correct’, ‘possibly correct’ and ‘incorrect’ (Fig. 1). Disagreements were resolved by means of consensus. The different kinds of management, as stated by the GPs, were grouped as: (i) reassurances/life-style advice; (ii) treatment (medication, other treatment such as taping or liquid nitrogen, or additional investigation); (iii) referral to a paramedical professional (e.g. podiatrist, orthotist, physiotherapist and others such as chiropodists); and (iv) referral to a medical specialist (neurologist,

orthopaedic surgeon, rehabilitation specialist and rheumatologist).

Data processing and analysis

Cronbach’s alpha was calculated to define to what extent the correctness of the diagnoses was intercorrelated among the seven cases. An overall score was constructed for the degree of correctness in diagnosing foot problems by summing the scores for each vignette (‘correct’ = 3; ‘possibly correct’ = 2; ‘incorrect’ = 1) and dividing this sum score by the number of vignettes included (mean 2.3; range 13). GPs were dichotomized along the mean; a score of ≥ 2.3 was defined as ‘competent’ and a score of < 2.3 as ‘less competent’. The relationship between the GP characteristics and competence in diagnosing was analysed using a multivariate logistic regression model [adjusted odds ratios; 95% confidence interval (CI)]. All analyses were performed with SPSS for Windows.

Results

A total of 72 GPs (80%) completed the questionnaire. They were on average 45 years old (range 34–63), 74% were male, 41% worked single-handed, 20% had been in practice for 20 years or more, and only three

A woman (55 years old) visits your practice. For the past several years the patient’s forefeet ache on the inside, left more than right. In fact, only when she is wearing sportshoes can she walk without too much pain. She can walk the best without shoes. There is no tingling or numbness. Her feet are not cold or purple. The patient does not use any medication. During physical examination, you notice that the patient is toeing off over the outside of the foot while walking. Her big toes are laterally deviated and cannot be completely reduced. There is pain, redness, and swelling medial of the MTP-I joint. It is not possible to put the first toe on the left side in dorsal flexion. Arterial pulsations of the feet are present. No other morbidity.

1. What is your diagnosis?

2. What are you going to do?

reassurance

explanation

referral primary care

 If so, to whom?

medication/dosage/duration

additional investigations yes/no

 If so, what kind?

referral to medical specialist yes/no

 If so, what type?

Other advice

Rating of correctness of the GP’s diagnosis

correct hallux valgus; bunion; bursitis

possibly correct arthrosis MTP-1; gout; tight shoes

incorrect toe deformation; rheumatoid arthritis; pedes planovalgi; metatarsalgia; diabetic foot; insufficient forefoot; sesamoid pain.

FIGURE 1 An example of one of the vignettes on common foot problems (hallux valgus) and the questions on diagnosis and treatment

TABLE 1 Correctness of diagnosis by GPs in written cases of non-traumatic foot problems (n = 72).

Diagnosis	Hallux valgus %	Hallux rigidus %	Fasciitis plantaris %	Tarsal tunnel syndrome %	Metatarsalgia %	Corns/calluses %	Rheumatoid arthritis %
Correct	79	53	36	15	30	57	86
Possibly correct	14	10	50	11	60	32	1
Incorrect	7	37	14	74	10	11	13

had followed continuous medical education on foot problems in the past 3 years.

Diagnosis

The degree of correctness of the diagnosis varied between the vignettes: nine in 10 GPs diagnosed the rheumatoid arthritis vignette correctly and eight in 10 the hallux valgus vignette (Table 1). The tarsal tunnel syndrome vignette was diagnosed incorrectly by three-quarters of the GPs; incorrect diagnoses include tendinitis, heel pain, heel spur and arthritis. The hallux rigidus vignette was diagnosed incorrectly by one-third of the GPs; incorrect diagnoses include bursitis, gout, malpositioning of the first toe and limited joint mobility in diabetes. The intercorrelation of correctness of diagnosis was low/moderate ($\alpha = 0.33$). A total of 58% of the GPs were competent in diagnosing these common foot problems. GP characteristics were not associated independently with this competence.

Management

Patients with fasciitis plantaris were managed by six in 10 GPs themselves, and those with hallux rigidus by four in 10 GPs. Besides reassurances, life-style advice was given (e.g. try to lose weight, wear better shoes, try to relax more). Suggested treatment usually consisted of pain and anti-inflammatory medication [paracetamol and non-steroidal anti-inflammatory drugs (NSAIDs)]. Patients with rheumatoid arthritis were referred to orthopaedic surgeons or rheumatologists by eight in 10 GPs. In the remaining four vignettes, half of the GPs referred to a podiatrist. In the corns and calluses vignette, more than one in 10 GPs referred to a chiropodist. In all the vignettes, fewer than one in 10 GPs would refer patients to other paramedical personnel (e.g. orthotists and physiotherapists).

Discussion

In more than half of the cases, the GPs were competent in diagnosing vignettes of common foot problems. Diagnostic competence showed great variation between cases and was not associated with GP characteristics. The proposed management, however, varied less. The results of this study should be interpreted with caution.

Response to written case histories might represent competence rather than performance, because contextual factors and visual cues present in real patients are lacking.⁵ Previous studies, however, have shown a correlation between the strategies of GPs in written vignettes (competence) and in daily practice (performance).⁶ Although the response rate was high, the results of this study cannot be generalized since only a small group of GPs has been tested, and more female (6%) and fewer single-handed working GPs (6%) have been included compared with the general Dutch GP population.⁷

The present study shows that GPs often recognized the rheumatoid arthritis, hallux valgus, corns and calluses, and hallux rigidus vignettes, which was expected since these problems are familiar from daily practical experience. The fasciitis plantaris, metatarsalgia and tarsal tunnel syndrome vignettes were recognized less often. This was surprising, since the first two are common clinical occurrences and the last one, although a rare entrapment neuropathy in general practice, can easily be suspected by clinical testing as described in the vignette (comparable with testing for carpal tunnel syndrome). The seven vignettes that have been used in this study were loosely intercorrelated, indicating that GPs' competence is possibly based on a broad, multi-dimensional domain of knowledge and related to case characteristics, as has been shown in other task domains.⁸ GP characteristics, including number of years in practice, were not related to competence in diagnosing. The present study supported the idea that medical education and postgraduate training of GPs aimed at foot and ankle problems are insufficient, as has been shown for medical specialists in other studies.⁹

The GPs in this study were selective in their choice of referrals, which was in line with the gatekeeper tasks of Dutch GPs. It is noteworthy that in four vignettes, referral to a podiatrist was the most frequently proposed management, since evidence for the effectiveness of non-invasive interventions such as podiatric insoles is limited. Referral to an orthotist was proposed much less often in the present study, even though studies of selected populations have shown that both orthotics and shoe adjustments were able to relieve a number of these problems.¹⁰ The difference in the number of referrals to these related paramedical professions might be explained

partly by regional differences in the number of practising podiatrists and orthotists.

From these results, it might be concluded that GPs' competence to diagnose common foot problems varies, and more vocational or postgraduate training in this field is advisable. Although management varies less and often includes referral, knowledge of the effectiveness of specific treatments in general practice is lacking. Further research in this field to obtain evidence-based knowledge might be fruitful for both training and management.

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Appendix

Vignettes (written case descriptions)

1. Hallux valgus

A woman (55 years old) visits your practice. For the past several years, the patient's forefeet ache on the inside, left more than right. In fact, only when she is wearing sportshoes can she walk without too much pain. She can walk the best without shoes. There is no tingling or numbness. Her feet are not cold or purple. The patient does not use any medication. During physical examination, you notice that the patient is toeing off over the outside of the foot while walking. Her big toes are laterally deviated and cannot be completely reduced. There is pain, redness, and swelling medial of the MTP-I joint. It is not possible to put the first toe on the left side in dorsal flexion. Arterial pulsations of the feet are present. No other morbidity.

2. Hallux rigidus

A woman (53 years old) visits your practice. Several months ago, she started to have progressively painful big toes. Since the pain increases while walking, she walks

more and more on the outside of her feet. There is no tingling. Her feet are not cold or purple. During physical examination, you notice a bad toeing off when walking; the patient spares the medial side of her feet. The form of her feet is normal. Her toes are straight. There is no redness of the big toe. Limited dorsal flexion dig.I. Arterial pulsations are normal in both feet. No other morbidity.

3. Fasciitis plantaris

A man (38 years old) visits your practice. Several days ago, his left heel started to become painful. At rest, he has few complaints. In the course of the day, he experiences more trouble. During physical examination, you notice a calcaneus standing vertically; the patient registers pain when you exert pressure under the heel medially, radiating somewhat to the front. No other morbidity.

4. Tarsal tunnel syndrome

A man (36 years old) visits your practice. Several weeks ago, his left heel started to become painful. At rest, he had fewer complaints. In the course of the day, his complaints got worse. During physical examination, you

notice calcaneovalgus position, on the left more than on the right. He has pain when pressure is exerted medially under the heel. This pain increases when pressure is exerted under and behind the medial malleolus and tingling arises. No other morbidity.

5. Metatarsalgia (with photograph showing slight splay foot; hammer toes)

Female 42 years old.

Complaint: "my feet are tired"

Duration of complaint: a long time.

Physical examination: foot sole shows no hyperkeratosis or corns/calluses.

No other morbidity.

6. Corns/calluses (with photograph)

Male 50 years old.

Complaint: "painful sole of the forefoot"

Duration of complaint: a long time.

Standing job.

No other morbidity.

7. Rheumatoid arthritis (with photograph)

Female 75 years old.

Complaint: "painful foot, limited walking distance"

Duration: a long time.

GP is aware that patient has complaints of other joints.

Hands have ulnar deviation of the fingers.

No other morbidity.