Background: Foot OA is a common and disabling condition, yet its clinical course is poorly understood. Using baseline data from the Clinical Assessment Study of the Foot (CASF), we previously examined clusters of joints in the foot with radiographic OA and identified three potential phenotypes of foot OA: no or minimal foot OA, isolated first MTP joint OA and polyarticular foot OA. The aim of this study was to investigate the natural history of these foot OA phenotypes over an 18-month period.

Methods: The CASF is a community-based cohort of adults ≥50 years of age in North Staffordshire, UK. Participants who reported foot pain in a postal health survey and underwent radiographic assessment (weight-bearing anterior–posterior and lateral radiographs of both feet) at baseline were mailed a follow-up questionnaire 18 months later. Changes in descriptive and symptomatic characteristics over 18 months were compared across the three phenotypes. These characteristics included foot pain severity (0–10 numeric rating scale), Rasch-transformed Manchester Foot Pain and Disability Index, 12-Item Short Form physical and mental component summary scores, Hospital Anxiety and Depression Scale, frequent foot pain in the past month, dissatisfaction with foot symptoms persisting, hallux valgus and hip and knee pain in the last year. Within-phenotype changes over time were examined using McNemar’s test and paired t-test for dichotomous and continuous variables, respectively. Differences between phenotypes were examined using binary logistic regression for dichotomous outcomes and linear regression for continuous outcomes, using no or minimal foot OA as the reference category. Crude regression models were compared with estimates adjusted for baseline scores alone and also with estimates adjusted for baseline scores, age, gender and body mass index.

Results: Of 533 baseline participants, 478 (89.7%) provided 18 month follow-up data: no or minimal foot OA (n = 307), isolated first MTP joint OA (n = 101) and polyarticular foot OA (n = 70). All three foot OA phenotypes showed within-phenotype reductions in mean foot pain severity over 18 months (P < 0.05): no or minimal foot OA [baseline 5.19 (S.D. 2.57), 18 months 4.05 (S.D. 2.82)], isolated first MTP joint OA [4.73 (S.D. 2.57), 4.13 (S.D. 2.79)] and polyarticular foot OA [5.88 (S.D. 2.53), 5.11 (S.D. 2.52)]. At 18 months, there was an increased frequency of hallux valgus in the left foot identified in the isolated first MTP joint OA phenotype [fully adjusted odds ratio = 2.96 (95% CI 1.23, 7.12)].

Conclusion: Foot pain severity decreased over 18 months in all three phenotypes, whereas there was little difference between phenotypes. These findings suggest that the 18-month follow-up period may be too short to capture changes that distinguish between-phenotype characteristics indicative of foot OA progression. Replication and longer-term follow-up are required to further describe the natural history of foot OA.

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