CONCISE REPORT

Syndrome of symptomatic adult acetabular dysplasia (SAAD syndrome)

F Birrell, A Silman, P Croft, C Cooper, G Hosie, G Macfarlane on behalf of the PCR Hip Study Group

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Objectives: To determine the prevalence of acetabular dysplasia in subjects presenting with hip pain to primary care and its relationship with radiographic osteoarthritis (OA) of the hip.

Design: Cross sectional analysis of a prospective cohort.
Setting: 35 general practices across the UK.

Subjects: 195 patients (63 male, 132 female) aged 40 years and over presenting with a new episode of hip pain
Results: The prevalence of acetabular dysplasia in this study of new presenters with hip pain was high (32%). There was no significant relationship between acetabular dysplasia and radiographic OA overall.

Conclusions: The high prevalence of acetabular dysplasia across all grades of OA severity suggests that dysplasia itself may be an important cause of hip pain ("symptomatic adult acetabular dysplasia").

It has been suggested that mild forms of developmental acetabular dysplasia endure into adult life and cause hip osteoarthritis (OA),¹ with case series of hospital and clinic attenders² showing a high prevalence of acetabular dysplasia in advanced hip OA. By contrast, both cross sectional surveys^{3,4} and community cohort studies⁵ of radiographically defined disease have failed to find an association.

These studies did not distinguish subjects with and without hip pain. Although there is a lack of concordance between symptoms and radiographic evidence of hip OA,^{6,7} subjects with both pain and radiographic changes are most likely to present for health care or proceed to hip replacement.^{8,9} In one study of young adults with painful acetabular dysplasia sufficiently severe to warrant admission to hospital, subsequent progression to early hip OA was almost inevitable.¹⁰ Acetabular dysplasia may thus be relatively more important as a cause of painful OA either because of more rapid disease progression or as an independent risk factor for hip pain.

We have examined the prevalence of acetabular dysplasia in subjects presenting to primary care with hip pain and investigated its association with radiographic OA.

METHODS

Design

General practitioners (GPs) from the Primary Care Rheumatology Society, a group of doctors interested in musculoskeletal disorders, were recruited from 35 practices around the UK and asked to enrol consecutive patients who attended with a new episode of hip pain. Anteroposterior pelvic radiographs were taken to determine hip OA and acetabular dysplasia. Ethical approval was obtained locally for each practice.

Subjects

Patients were 40 years or older and presented with a new episode of hip pain between November 1994 and October 1997.

Case definitions were derived by consensus between study investigators and participating GPs and validated in a pilot study. "Hip pain" was pain within a pre-shaded area on a standardised pain drawing (fig 1) which according to GP assessment was not arising from structures outside the hip. Replaced hips were excluded as the index joint. A "new episode" occurred if the patient had not presented to the GP in the previous 12 months with hip pain and had not had continuous hip pain for a longer period.

Radiographs

Acetabular dysplasia was defined as the presence of centre-edge angle $<25^\circ$ or acetabular depth <9 mm or both⁵ (fig 2). Two methods of assessing radiographic OA were used: (a) Croft's modification of the Kellgren and Lawrence grade, based on a summation of qualitatively assessed radiographic characteristics, and (b) measurement of minimal joint space (the shortest distance between the femoral head margin and the acetabulum).¹¹ The reliability of grading was assessed on an independent sample of films, and showed good intra-observer and interobserver agreement (weighted κ 0.7–0.9).

Analysis

The association between acetabular dysplasia and radiographic change was examined across modified Kellgren and Lawrence grades and by three groups of minimal joint space (≤ 1.5 mm, $>1.5 \leq 2.5$ mm, >2.5 mm). χ^2 Tests were used to test for differences and for trend. Individual associations were examined using odds ratios with 95% confidence intervals.

RESULTS

One hundred and ninety five subjects were recruited, mean age 63 years, of whom 132 (68%) were female. Most subjects had unilateral pain (53% right sided; 45% left sided; 3% bilateral). A radiographic OA grade of one or more was found in 57% of painful hips; table 1 shows the distribution. Minimal joint space was ≤ 2.5 mm in 30% (≤ 1.5 mm in 14%; $>1.5 \leq 2.5$ mm in 16%).

There was no difference in the prevalence of acetabular dysplasia between men and women. Prevalence was lower in the youngest age group than at older ages, but the trend was not significant (χ^2 trend, $p=0.12$ – 0.60 , depending on the definition of dysplasia).

There was no overall trend of acetabular dysplasia with radiographic change as measured by overall grade (see table 1, χ^2 trend, $p=0.54$ – 0.80). Although there was a higher proportion with acetabular dysplasia among patients with the most severe grade of OA (grade 5), this observation was based on small numbers.

Abbreviations: GP, general practitioner; OA, osteoarthritis

Figure 1 Standardised drawing for hip pain.

Figure 2 Anteroposterior pelvis radiograph showing markers of acetabular dysplasia.

The relationship of acetabular dysplasia to the minimal joint space on the side of pain showed a similar pattern to that seen for dysplasia and overall grade of OA. Those with minimal joint space ≤ 1.5 mm had the highest proportion with dysplasia (39%; compared with 36% for minimal joint space

$>1.5 \leq 2.5$ mm, and 32% for minimal joint space >2.5 mm), but the trend across categories of joint space was not significant (χ^2 trend, $p=0.10-0.62$).

DISCUSSION

The prevalence of acetabular dysplasia in this study of new presenters with hip pain was high—up to 32%. This is higher than prevalence estimates from community surveys,^{3 12 13} which range between 2 and 5%, but similar to that in patients awaiting hip arthroplasty.² This supports the suggestion that acetabular dysplasia is more common in those presenting with hip pain.

We found no overall trend linking acetabular dysplasia with OA across age categories. It is unlikely therefore that a high proportion of hip disease is caused by dysplasia. However, the higher prevalence of acetabular dysplasia in the group with the most severe radiological OA would be consistent with an association between dysplasia and severe OA or with dysplasia predisposing to more rapidly progressive or destructive disease.

Given that acetabular dysplasia appears to be more common in those presenting with hip pain in primary care than in the general population, it is possible that adult dysplasia itself is a cause of hip pain. The lack of any broad relationship between dysplasia and radiographic hip OA in this primary care sample of hip pain consulters suggests that “symptomatic adult

Table 1 Relationship of acetabular dysplasia to grade of radiographic osteoarthritis on side of pain

	Modified Kellgren and Lawrence grade on side of pain						Total	χ^2 Trend	p Value
	0	1	2	3	4	5			
Centre edge angle $<25^\circ$									
No	19	8	3	6	5	5	46	0.17	0.68
%*	23	31	16	19	23	46	24		
Acetabular depth <9 mm									
No	15	3	5	4	4	4	35	0.38	0.54
%*	18	12	26	12	18	36	18		
Acetabular dysplasia: either									
No	26	10	6	7	7	6	62	0.06	0.80
%*	31	39	32	21	32	55	32		
Subjects per group									
No	83	26	19	34	22	11	195		
%†	43	13	10	17	11	6	100		

*Column percentage; †row percentage.

acetabular dysplasia" (SAAD) may be a discrete syndrome distinct from hip OA.

Our study may have underestimated the prevalence of mild OA because of the insensitivity of routine radiographs to early arthritic change. However, this would not explain the lack of any overall association between measures of acetabular dysplasia and OA. We also found that a significant minority of patients presenting with hip pain have no radiographic evidence of either OA or acetabular dysplasia, and future studies should investigate the role of other causes of hip pain, such as soft tissue inflammation, in this age group.

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Authors' affiliations

F Birrell, A Silman, ARC Epidemiology Unit, University of Manchester, M13 9PT, UK

P Croft, Centre for Primary Care Sciences, University of Keele, Staffordshire ST5 5BG, UK

C Cooper, Environmental Epidemiology Unit, University of Southampton, Southampton SO16 6YD, UK

G Hosie, Knightswood Medical Practice, 1980 Great Western Road, Glasgow G13 2SW, UK

G Macfarlane, Unit of Chronic Disease Epidemiology, University of Manchester M13 9PT, UK

Contributors: Peter Croft, Alan Silman, Cyrus Cooper, and Gillian Hosie initiated the study. Coordination was undertaken by Alan Silman, Gary Macfarlane, and Fraser Birrell. Grading of radiographs was performed by Fraser Birrell and Liz Nahit, with adjudication of discrepancies by Peter Croft. Fraser Birrell analysed the data and with Peter Croft drafted the paper, which was reviewed, revised, and finalised by all authors.

Correspondence to: Professor P Croft; p.r.croft@cphc.keele.ac.uk

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