Osteoarthritis of the hip and Heberden's nodes

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SUMMARY   One hundred consecutive patients with proved osteoarthritis were assessed for the presence of terminal interphalangeal joint disease. There was a significant association found between the presence of Heberden's nodes and primary (axillary) arthritis. Secondary osteoarthritis was relatively free of nodal involvement. It is suggested that Heberden's nodes are a helpful clinical marker in differentiating between the two major groups of osteoarthritis.

Key words: hip arthritis; terminal interphalangeal joint disease; classifications; primary and secondary disease.

Osteoarthritis of the hip is classified as primary (idiopathic) or secondary. The incidence of both has varied in studies published, reflecting the interpretation of data and the varied perception of known causes.[1-3] Recently, geographical differences have been emphasised,[4] suggesting that local environmental or genetic factors play a significant part. Studies aiming at identifying selected groups of secondary osteoarthritis help to guide treatment and thus ultimately lead to its prevention.

An association has been noted between terminal interphalangeal joint disease and osteoarthritis of the hip[5-7]; this has been disputed, however.[8] Although these studies have helped to show that different patterns of osteoarthritis (OA) exist, they have failed to emphasise clear clinical associations. The aims of this study were, using strict radiographic classifications, to confirm that such an association exists, to determine the patterns of joint involvement, and to assess the possibility of identifying clinically subgroups of secondary OA.

Patients and methods

One hundred and twelve consecutive patients admitted to St Mary's Hospital for total hip replacement were included. This was a prospective study and eliminated any chance of patient selection other than that dictated by admission policy. Each patient was examined initially by one clinician (FMG). The presence of distal interphalangeal joint disease was sought and graded (Table 1). Any previous history

of trauma or use of non-steroidal anti-inflammatory drugs was noted. Immunological screening was done, including rheumatoid factor, to exclude any cases of possible rheumatoid arthritis as Heberden's nodes are not exclusive to osteoarthritis.[9] Radiographs of the hands were graded (Table 2) with the classification adopted by Swanson.[10]

Osteoarthritis of the hip was classified into six major radiographic patterns reflecting degenerative changes and migration of the femoral head (Fig. 1).[4] Three of these have a medial migratory pattern with

Table 1   *Clinical grading of Heberden's nodes*

None	No hypertrophic nodes; normal joint
Mild	Minimal soft tissue capsular thickening; normal joint
Moderate	Hypertrophic nodes; diminished range of joint movement
Severe	Large hypertrophic nodes; deviations; dislocations

Table 2   *Radiographic grading of Heberden's nodes*

Grade 1	Joint narrowing	Minimal
Grade 2	Joint narrowing, subchondral sclerosis; hypertrophic nodes	
Grade 3	Joint narrowing, subchondral sclerosis; hypertrophic nodes; erosions	Moderate
Grade 4	Joint narrowing; subchondral sclerosis; hypertrophic nodes; erosions; cystic formation; deviation	
Grade 5	Joint narrowing; subchondral sclerosis; hypertrophic nodes; erosions; cystic formation; deviations and dislocations	Severe

Congenital dislocation   Dysplasia

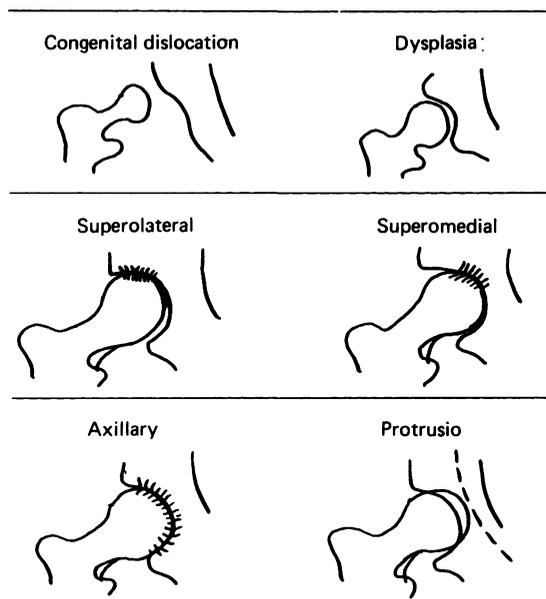Superolateral   Superomedial

Axillary   Protrusio

Fig. 1 *Radiographic patterns of hip joint disease.*

concentric loss of articular cartilage, osteophyte formation about the femoral head, and loose bodies within the joint. They are thought to represent different stages or expressions of primary osteoarthritis. The remaining three (congenital dislocation, dysplasia, and superolateral) have a superolateral pattern of arthritis and are considered secondary in origin. Together these six groups account for most cases of arthritis of the hip. Finally, comparisons were made between the respective subgroups.

Results

Twelve patients were considered to have rheumatoid disease and were excluded, leaving 100 patients in the study. Heberden's nodes were absent in 31, moderate in 19, and severe in 10 (Table 3). Forty patients were considered clinically to have minimal soft tissue capsular thickening (mild); this probably reflects early degenerative changes. Twenty nine were graded radiographically as moderate/severe, a value similar to that found by Marks *et al.*[6] Of the six major radiographic hip patterns, the axillary group (37 patients) was strongly associated with the presence of Heberden's nodes (grades 3–5 in 103/370 (27·8%) of joints) (Table 4). This subgroup, predominantly women (M/F 15/22; Table 5), represents the major pattern of primary OA.

Table 3 *Numbers of patients in each group having clinical evidence of Heberden's nodes*

Group	None	Mild	Moderate	Severe
CDH*	1	—	—	—
Dysplasia	8	8	1	—
Superolateral	6	8	3	3
Superomedial	3	6	—	—
Axillary	6	12	13	6
Protrusio	2	—	1	1
Avascular necrosis	3	5	—	—
Perthes' disease	1	1	—	—
Chondrocalcinosis	1	—	—	—
Acromegaly	—	—	1	—
Total	31	40	19	10

*CDH=congenital dislocation of the hip.

Table 4 *Number of joints in each group graded by severity of distal interphalangeal joint arthritis (100 patients=1000 joints)*

Group	Grade				
	0	1	2	3	4
CDH*	10	—	—	—	—
Dysplasia	96	47	24	3	—
Superolateral	85	63	37	9	6
Superomedial	41	19	25	5	—
Axillary	55	73	139	80	22	1
Protrusio	4	—	6	22	8
Avascular necrosis	31	35	14	—	—
Perthes' disease	11	6	3	—	—
Chondrocalcinosis	6	4	—	—	—
Acromegaly	—	—	—	9	1	—
Total	339	247	248	128	37	1

*CDH=congenital dislocation of the hip.

Table 5 *Numbers, sex, and age distribution of patients in each group*

Group	Men/women	Mean age (years)	Number
CDH*	1/0	58·0	1
Dysplasia	9/8	61·2	17
Superolateral	13/7	67·5	20
Superomedial	3/6	64·6	9
Axillary	15/22	71·4	37
Protrusio	0/4	65·8	4
Avascular necrosis	1/7	74·5	8
Perthes' disease	2/0	61·5	2
Chondrocalcinosis	0/1	80·0	1
Acromegaly	0/1	63·0	1
Total	44/56	66·7	100

*CDH=congenital dislocation of the hip.

Protrusio had a similar pattern, confirming it is an expression of axillary OA. Superomedial OA, as expected, being an earlier stage of axillary OA, displayed a weaker association. The dominant female ratio was again apparent (M/F 3/6), however, though the mean age was less (64·6 years) than that in the axillary group (71·4 years) (Table 5).

When we compared the patterns of secondary OA minimal association was found between the presence of hypertrophic nodes and congenital dislocation (CDH) or dysplasia of the hip. Superolateral OA is thought to have a biomechanical basis; although joint congruity is preserved, there is the same pattern of wear on the superolateral joint margin as seen in dysplasia and CDH. Thus as might have been expected there was a weak association with Heberden's nodes, with only 15/200 (7·7%) joints classified as grades 3–5 (Table 4). Clinically, six patients in this group were considered to have isolated moderate/severe joint disease involving one or more joints (Table 3). In all these cases there was a previous history of trauma to the joint(s) affected; many of this predominantly male group (M/F 13/7) were involved in manual occupations where the risk of joint injury is high. Apart from the six major groups there were 12 patients with clearly secondary arthritis. Only one patient, with acromegaly, was found to have Heberden's nodes (Table 3). It is apparent, therefore, that Heberden's nodes are associated more with primary than secondary arthritis and as a marker may help to differentiate between the two major groups of osteoarthritis.

Discussion

There have been many classifications of hip OA. All have recognised the different patterns of joint wear[6 7 11] but failed to differentiate between primary and secondary subgroups, which might guide treatment and possibly lead to prevention. Hoaglund *et al* simplified matters by identifying six major subgroups, reflecting the patterns of femoral head migration and consequent loss of joint space.[4] Three of these have a medial migratory pattern, which we feel are different expressions of primary osteoarthritis. In contrast, biomechanical arthritis due either to incongruity of joint surfaces or reduction in femoral head cover leads to destructive changes on the superolateral joint margin.[12]

Of the patients with secondary OA (50%), only eight clinically had isolated Heberden's nodes. These were single joints affected with known trauma as a cause. Of those with primary OA, however, 21 had moderate to severe Heberden's nodes usually affecting all terminal interphalangeal joints with slight preference for the dominant hand. This was a predominantly female population (M/F 18/32) with a mean age of 67·2 years. In secondary OA there was a more equal sex distribution (M/F 26/24) with a mean age of 66·5 years. It is apparent that primary osteoarthritis is a disease more of women and may have a systemic component reflected by the strong association with Heberden's nodes. Research, therefore, needs to be directed selectively at this population to evaluate possible systemic factors and hopefully lead to prevention.

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