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Risk for hip OA in Twins

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Context

Previous studies on the genetic contribution of hip osteoarthritis (OA) used siblings of OA probands undergoing hip replacement. These studies suffered from insufficient numbers of cases and used highly selected groups. In this paper MacGregor and colleagues used a population-based twin study to evaluate the genetic contribution to radiographic OA of the hip.

Significant findings

The casewise concordance for grade I & II OA changes in monozygotic (MZ) and dizygotic (DZ) twins was higher than would be expected from the prevalence in the group as a whole, suggesting familial clustering. Concordance for OA among MZ twins was more than DZ twins suggesting a genetic basis for hip OA. The same was for true for joint space narrowing. There was no excess of sclerosis ($\geq 5\text{mm}$) in the MZ twins, although both MZ and DZ concordance rates were double the expected prevalence, suggesting familial aggregation without genetic basis. Amongst potential confounding factors, only age and body mass index were contributed to risk of hip OA. A greater environmental sharing between MZ twins compared with DZ twins was found; factors included smoking, alcohol consumption, and life-time exposure to exercise. None of these factors appeared to be significantly associated with OA.

Comments

This paper for the first time investigates the genetic contribution to hip OA in the community using unselected twin pairs. The results estimated the heritability of radiographic hip OA to be about 60%, similar to other multifactorial diseases such as rheumatoid arthritis. This study separated genetic and environmental effects on susceptibility to hip OA radiographic changes. As this is a population-based

study, only milder radiographic OA changes (grade I and II) could be investigated with confidence. This study was limited to women and the calculated genetic contribution may not apply to male OA.

Methods

Population-based cross-sectional female twin study, pelvic radiographs single observer OA grades

Additional information

Lanyon P, Muir K, Doherty S, Doherty M. **Assessment of a genetic contribution to osteoarthritis of the hip: sibling study.** *BMJ* 2000, **321**:1179-83 ([PubMedabstract](#)).

References

1. MacGregor AJ, Antoniades L, Matson M, Andrew T, Andrew T: The genetic contribution to radiographic hip osteoarthritis in women: results of a classic twin study. *Arthritis Rheum.* 2000, **43**: 2410-2416.