

Familial and genetic influences on the common paediatric primary pain disorders: A twin family case-control study

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Abstract

Objective: The common paediatric primary pain disorders are associated with each other, and genetic influences have been suggested to be causally implicated in their vulnerability or aetiology. The objective of this study was to apply the twin family model to the investigation of genetic influence on the common paediatric primary pain disorders.

Methods: Surveys were sent to 3909 Australian twin families, assessing the lifetime prevalence in children and adolescents of growing pains, migraine, headache, recurrent abdominal pain, low back pain, restless legs syndrome (RLS), persistent pain in twins and their immediate family members. Comparisons between monozygous (MZ) and dizygous (DZ) twin pair correlations, and odds ratios were performed to assess the contribution of additive genetic influences. Random effects logistic regression modelling was used to demonstrate relationships between twin individuals and their mothers, fathers and oldest siblings with the subject conditions.

Results: Twin analyses of responses from 1016 families revealed significant influence of additive genetic effects on the presence of growing pains, migraine, recurrent abdominal pain and RLS. The analyses for headache, low back pain, and persistent pain overall did not conclusively demonstrate that genetic influences were implicated more than shared environmental factors. Regression analysis demonstrated varying levels of significance in relationships between family members and twin individuals for the tested conditions, with strongest support for genetic influences in growing pains and migraine. Subset analyses showed that growing pains was confounded by painful RLS in one-third and, when cases with urge to remove the legs were excluded, genetic influence was retained. RLS comprised contrasting phenotypes: a painless form strongly associated with iron deficiency and a painful form which was genetically influenced. Distinct associations were found for all the conditions.

Conclusions: The results imply that genetic factors contribute to growing pains, migraine, recurrent abdominal pain and painful RLS.



Biography

David Champion was the Founder and is currently Honorary Consultant to the Pain Research Unit, Department of Pain Medicine, Sydney Children's Hospital, and Associate Professor, School of Women's and Children's Health, University of New South Wales, Sydney, Australia. He is a rheumatologist and pain medicine specialist, adult and paediatric, and his Doctorate by published work was in pharmacology. While working in private practice, he has co-authored more than 140 publications. His awards include Member in the General Division of the Order of Australia for significant service to medicine in the field of paediatric rheumatology, and to medical research and treatment of musculoskeletal pain and The Distinguished Member Award 2020 by the Australian Pain Society.

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