

RELATIONSHIPS BETWEEN GROWING PAINS, RESTLESS LEGS SYNDROME, MIGRAINE AND HEADACHES: A TWIN FAMILY CASE CONTROL STUDY.

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BACKGROUND AND AIMS

Of the functional pain syndromes (FPS) of childhood, growing pains (GP) and migraine are the conditions most strongly genetically influenced. In a previous twin family study of GP conducted through the Australian Twin Registry (ATR), we obtained data supporting the conclusion that GP might share genetic determinants with restless legs syndrome (RLS). The current study involving independent twin sampling was designed to confirm this association and, applying a twin family case control design, determine whether GP is associated with other FPS, particularly migraine and headaches.

METHOD

A cross-sectional survey of 1800 twin families (twins aged 3 – 18 years, siblings and parents) examining associations between the common FPS of childhood (particularly focusing on GP, RLS and migraine criteria) was mailed through the ATR, yielding 438 evaluable responses consisting of 235 monozygous (MZ) and 203 dizygous (DZ) twin families. Comparing families with at least one twin with GP as cases and families with neither twin having GP as controls, Chi-square tests and descriptive statistics were applied to investigate prevalence rates and associations between GP, RLS, migraine and other FPS. Concordance rates and ratios were calculated to assess heritability.

RESULTS

There were 93 twin families with at least one twin fulfilling criteria for lifetime prevalence of GP and 345 control twin families. Of the 56 MZ twin pairs with at least one twin having GP, 26 pairs were concordant (pairwise concordance 0.46, casewise concordance 0.63). Of the 37 DZ twin pairs with at least one twin having GP, 7 pairs were concordant (pairwise concordance 0.19, casewise concordance 0.32). Although the casewise concordance was lower than we had previously reported, there was a significant difference between the MZ/DZ casewise concordance ($X^2=6.2$, $P=0.013$). Twin individuals with GP had significant associations with RLS, migraine and headache, but not recurrent abdominal pain (RAP) as tabulated.

Associated disorders in twin individuals				
Twin Individuals	RLS	Migraine	Headache	RAP
GP (N=126)	34 (27.0%)	12 (9.5%)	23 (18.3%)	17 (13.5%)
Controls (N=750)	40 (5.3%)	35 (4.7%)	66 (8.8%)	79 (10.5%)
Odds Ratio	6.6	2.2	2.3	1.3
X², P-value	62.8, p<0.0001	4.1, p=0.04	9.5, p=0.002	0.7, p = 0.4

In families of twin pairs with GP, 43.5% of mothers and 31.4% of fathers had a history of GP, significantly greater than in control families ($P<0.001$). RLS in mothers occurred significantly more frequently in GP families (42.4%) than in control families ($P=0.02$) while RLS in fathers did not occur more frequently in GP families (22.1%) than control families.

CONCLUSION

The evidence that GP is genetically influenced was supported. GP was associated with RLS in twin individuals and their families, and with migraine and headache in twin individuals.