Generalized Joint Hypermobility in childhood is a predictive risk factor for pain development in adolescence: a cohort study

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AIM

Generalized Joint Hypermobility (GJH) is associated with pain development in adults. How early pain develops, and whether GJH without pain (NGJH) at 8 and 10 years is a risk factor for pain development in adolescence is unclear.

The aim was to investigate the association between GJH in Danish children at 8 and 10 years of age and pain development at 14 years. A second aim was to re-examine GJH status and physical function among adolescents at 14 years of age.

CONCLUSION

This study indicates that GJH in childhood is a risk factor for development of musculoskeletal pain in adolescence, and that pain is also a contributing factor for pain in adolescence. Further, adolescents with GJH have lower self-reported physical function and higher BMI, but currently with little influence on measured physical function.

RESULTS

GJH in childhood (8 and 10 years) compared with NGJH was a three-fold risk factor for pain development in adolescence, however, with wide confidence limits (OR: GJH5 3.00 [0.94-9.60]) (Table 1).

Adolescents with GJH at 14 years reported significantly lower physical function (Pain, ADL) for GJH4 and GJH5 (Figure 1), higher frequency of SPD (pain disturbing sitting during class) for GJH4 (18% vs 6.4%, *p*=0.002), and had significantly higher Body Mass Index for GJH5 (21 vs 19, *p*=0.004), and for GJH6 (21 vs 20, *p*=0.006).

There was no difference in measured physical function (VJH, dynamic balance), but adolescents with GJH had significantly larger static sway for GJH4 (5.1 vs 4.7 cm^2, p=0.05).

	Outcome		Univariate analysis	Multivariable analysis
	Arthralgia (n=12)	Non-arthralgia (n=288)	OR (95% CI)	OR (95% CI)
Exposure				
<GJH4	5	145	1.00	1.00
≥GJH4	7	143	1.42 (0.44-4.58)	1.37 (0.42-4.43)
<GJH5	6	216	**1.00**	
≥GJH5	6	72	**3.00 (0.94-9.60)**	NR
<GJH6	9	241	1.00	
≥GJH6	3	47	1.71 (0.45-6.55)	NR

Table 1: Longitudinal data. Odds ratio (OR) for the three groups of Generalised Joint Hypermobility (GJH).

METHODS

Children from the Copenhagen Hypermobility Cohort (n= 301) at 8 and 10 years were re-examined at 14 years of age for GJH (by Beighton score (BS)), and for Benign Joint Hypermobility Syndrome (by Brighton criteria (BTC)).

GJH was classified as: 1) BS ≥4 (GJH4), 2) BS ≥5 (GJH5), and 3) BS ≥6 (GJH6). Pain was defined as arthralgia (pain for more than four joints for more than three months (from BTC)). Motor competence, (vertical jump height (VJH), static and dynamic balance), was measured. Rheumatoid and Arthritis Outcome Score for children, RAOS-child, (modification of Knee Osteoarthritis Outcome Score for children, KOOS-child), and Subjective Pain Disability (SPD) measured self-reported physical function.

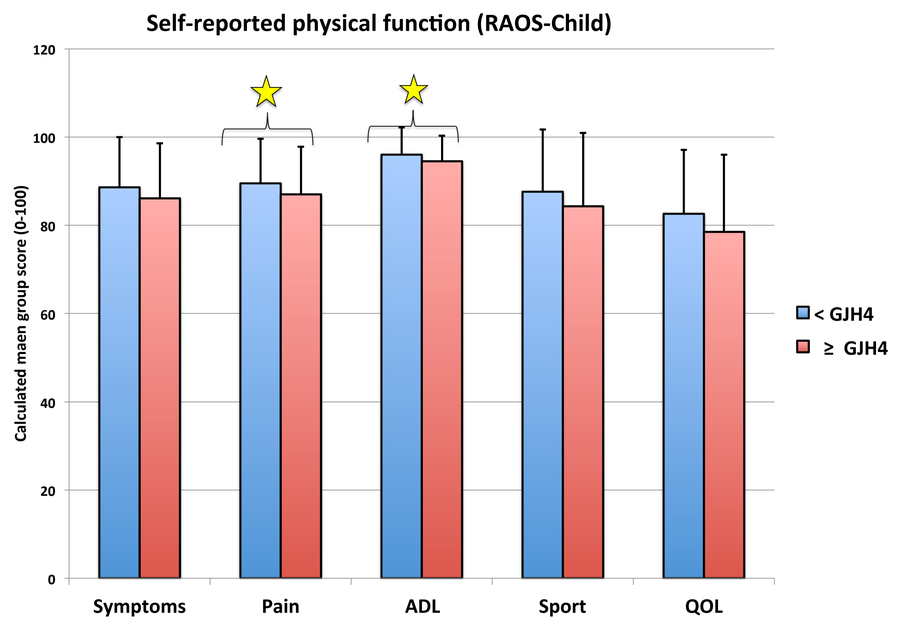

Figure 1. Follow-up data. Self-reported physical function (Rheumatoid and Arthritish Outcome Score-Child) for the groups with <4 and ≥4 positive Beighton tests (GJH4). Stars designate significance <0.05.

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