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Hip symptoms, pain and related quality of life in young adulthood after developmental dysplasia of the hip in infancy

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Introduction

Developmental dysplasia of the hip (DDH) is the most common infant musculoskeletal disorder. Information on later hip health of non-surgically treated DDH is limited to series in which the treatment was not started in neonatal period, or the surveillance was ended at early age. Research on the hip related quality of life and detailed symptoms is lacking altogether.

Methods

134 patients born in 1995-2001 and treated for DDH in infancy in the Oulu University hospital and living within 300 km of Oulu were invited. 186 controls were invited and willing were matched by gender and age within 3 months.

The Copenhagen Hip and Groin Outcome Score (HAGOS) was answered for both hips. It covers 6 subscales (Figure 1). In the scores 0 represents extreme, and 100 represents no hip/or groin problems. Previous treatment details were gathered.

		N	HAGOS SUBSCALES
Gender	Female	79	Pain
	Male	21	Symptoms
Affected hip	Right	21	Function in daily living (ADL)
	Left	49	Function in sports and recreation (Sport/Rec)
	Bilateral	32	Participation in Physical Activities (PA)
Treatment	Von Rosen - like splint	95	Hip related Quality of Life (QOL)
	Additional Spica cast	5	
	Open/Closed Reduction	4	

Table 1. Characteristics of patients.

Results

A total of 100 (74.6%) patients (18.2 years, SD 2.10) participated (Table 1). Deformity e.g. from mild to severe dysplasia or lateralization of the femoral head was present in x-ray in 30 hips at walking age (1.10 years, SD 0.16). In 26 hips deformity was still present at latest follow-up (2.46 years, SD 3.22). A total of 95 (51.1%) controls, 77 female and 18 men of mean age of 18.1 years (SD 2.10) answered HAGOS for both hips.

There was a statistically significant difference in all HAGOS scores but PA between groups (Table 2 and 3). Difference remained when patients with deformity at follow-up were excluded. Sealing effect was detected as expected.

Subscale	Patients % (N=200 hips)				Controls % (N=190 hips)			
	95 ≤	90 - 94.9	85 - 89.9	85 >	95 ≤	90 - 94.9	85 - 89.9	85 >
Pain	64.5	12.5	11.0	12.0	79.5	10.0	5.3	5.3
Symptoms	33.5	5.5	18.5	42.6	38.4	19.5	15.3	26.8
ADL	80.0	6.5	7.0	6.5	91.6	4.2	3.2	1.1
Sport/Rec	56.0	15.0	8.0	21.0	69.5	14.7	5.8	10.0
PA	60.0	0	8.5	31.5	60.5	0	12.1	27.4
QOL	67.5	9.0	2.5	21.0	80.5	3.7	4.7	11.1
Total	50.0	17.0	13.5	19.5	64.7	17.9	7.4	10.0

Table 2. HAGOS subscale scores presented in 5.0 point intervals.

Discussion

In general, patients scored high, indicating satisfying hip health after DDH treated in infancy. However, 20% of patients scored below 85 points in Sport/Rec, QOL and Total scores, in respect to 10% of controls. Low symptom scores were emphasized in both groups which has been previously reported in adult athletes without hip complaints (Thorborg et al., 2014).

It is known that hips considered normal in surveillance, can develop dysplasia again (Cashman et al., 2002; Modaressi et al., 2011) and that neonatal DDH increases the risk for hip replacement in young adulthood (Engesæter et al., 2008). These factors could contribute to hip health later in life.

Conclusions

Patients have lower HAGOS scores than controls. This cannot be explained only by deformities seen in early childhood surveillance. Reasons for these differences should be investigated further.

SUBSCORE	Patient hips (N=200)			Control hips (N=190)			U	p-value
	Mdn	IQR	Mean Rank	Mdn	IQR	Mean Rank		
Pain	100	90.0-100	184.2	100	95.0-100	207.4	21267.0	0.027
Symptoms	89.29	75.0-100	211.1	92.86	82.1-96.4	180.7	21970.0	0.007
ADL	100	95.0-100	183.5	100	100-100	208.2	21410.0	0.004
Sport/Rec	96.88	87.5-100	179.6	100	93.8-100	212.2	22174.5	0.002
PA	100	75.0-100	193.4	100	75.0-100	197.7	19422.5	0.665
QOL	100	90.0-100	179.6	100	95.0-100	212.2	22174.5	0.001
Total HAGOS	94.93	86.7-99.3	182.0	97.30	92.6-99.3	209.7	21691.5	0.015

Table 3. Hagos subscale scores and Mann-Whitney U-test results.

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