



JUVENILE IDIOPATHIC ARTHRITIS IN CHILDREN WITH TYPE 1 DIABETES: IMPACT OF CURRENT MEDICAL TREATMENT OPTIONS ON ANTHROPOMETRY AND METABOLIC CONTROL

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Introduction and Objectives

Treatment for juvenile idiopathic arthritis (JIA) has evolved, with less steroid use and increased reliance on biologic drugs. We hypothesized that these advances have reduced the impact on anthropometry and metabolic control in children with type 1 diabetes (T1D) and JIA. Our study examined the characteristics of children with JIA and T1D compared to a survey from 1995 to 2013 [1].

Methods

We evaluated data from patients with T1D, aged 0.5 to 16 years at diagnosis, and examinations documented between January 1995 and December 2023 at 417 DPV centers in Germany, Austria, Switzerland, and Luxembourg. JIA diagnoses were identified through documented diagnoses, ICD-10 codes and a list of trade names and active substances, including steroids and biologics. Statistical analyses compared JIA and non-JIA patients (χ^2 -test, Wilcoxon-test) for demographic and treatment parameters. Treatment periods (1995-2013, 2014-2018, 2019-2023) were compared, and regression models evaluated outcome differences between JIA and non-JIA patients, adjusted for demographics and diabetes duration.

Results

Height was slightly lower in 212 children with JIA and T1D compared to 80899 children with T1D only, while body mass index (BMI) did not differ significantly. Weekly sports activities and the proportion of individuals with migration background were similar in both groups.

Children with JIA and T1D more frequently used diabetes technologies, such as insulin pumps, glucose sensors and automated insulin delivery (AID) systems. Insulin doses were higher and HbA1c values were lower, both significantly.

The prevalence of hypertension and dyslipidemia were comparable, but children with T1D and JIA were more frequently treated with antihypertensive medication and statins (see table 1).

Compared to 1995–2013, the BMI of children with T1D and JIA was lower in 2014–2019 and 2020–2023, while height remained stable across periods. Weekly sports activities increased over time (see table 2).

Table 1: Comparison of patients with type 1 diabetes and juvenile idiopathic arthritis vs. patients with type 1 diabetes alone (percentages or mean values [standard deviation])

	Patients with T1D and JIA	Patients with T1D	p-value
n	212	80899	
Height-SDS	-0.06 [1.06]	0.13 [1.07]	0.439
BMI-SDS	0.15 [0.99]	0.28 [0.93]	0.874
Sports activities (h/wk)	2.3 [2.4]	2.7 [2.7]	1.000
Migration background (%)	25.9	22.1	1.000
Insulin pump (%)	64.5	47.6	< 0.001
Glucose sensor (%)	68.9	51.2	< 0.001
AID system (%)	26.6	15.1	0.002
Insulin dose (IE/kg*d)	0.95 [0.4]	0.87 [0.4]	0.006
HbA1c (%)	7.7 [1.5]	8.0 [1.7]	0.039
Hypertension (%)	29.7	31.7	1.000
Dyslipidemia (%)	34.2	33.9	1.000
Antihypertensive medication (%)	8.0	1.8	< 0.001
Statins	2.8	0.7	< 0.01

Table 2: Anthropometry and frequency of sports activities of patients with type 1 diabetes and juvenile idiopathic arthritis over three time periods alone (mean values [standard deviation])

	1995-2013	2014-2019	2020-2023
BMI-SDS	0.35 [0.80]	0.08 [1.13]	0.10 [1.10]
Height-SDS	-0.04 [1.03]	-0.04 [0.98]	-0.08 [1.10]
Weekly sports activities (h/wk)	1.2 [1.7]	2.7 [2.8]	2.6 [2.4]

Conclusion

Children with JIA more frequently use modern diabetes technologies and achieve better metabolic control than those with T1D alone. Their height was slightly lower, while BMI remained similar. These data confirm good diabetes outcomes in children with JIA and T1D.

References

[1] Hermann G, Thon A, Mönkemöller K, Lilienthal E, Klinkert C, Holder M, Hörtenhuber T, Vogel-Gerlicher P, Haberland H, Schebek M, Holl RW. Comorbidity of type 1 diabetes and juvenile idiopathic arthritis. J Pediatr. 2015 Apr;166(4):930-5.e1-3.