

IMPACT OF SENSOR-AUGMENTED INSULIN PUMP THERAPY ON GLYCAEMIC CONTROL IN CHILDREN AND ADULTS WITH TYPE 1 DIABETES: A CLINICAL PRACTICE EXPERIENCE IN SPAIN

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Background and Aims

To evaluate the effect of sensor-augmented pump therapy (SAP) on HbA1c in routine clinical practice in adult and paediatric patients with type 1 diabetes (T1DM)

Methods

We performed a retrospective evaluation of the effect of SAP on glycaemic control in all T1DM patients treated in the adult and paediatric Diabetes Units at a referral hospital in Badajoz (south-western Spain)

Results

Table 1. Demographic characteristics

Age (years)	35 ± 14 (2-61)
Children and adolescents (< 18 years-old) (n)	14
Gender (female %)	62
Duration of diabetes (years)	21 ± 12
Time on SAP (months) (median [IQR])	16 [7-27]
Treatment before SAP (n)	
MDI + SMBG	39
Pump + SMBG	35
MDI + CGM	8
diabetes onset	3*
SAP (n)	
Minimed-640G + Enlite® (with PLS)	53
Minimed-Paradigm-VEO™ + Enlite® (with LGS)	29
Animas vibe® + DexcomG4®	3

(N = 85). *3 children had started SAP at diabetes onset (< 20 months-old); LGS (low glucose suspend function), PLS (predictive low-glucose suspend feature)

Percentage of patients with HbA1c ≤ 7% increased from 35% to 54% at the end of follow-up (p = 0.001). HbA1c at the end of follow-up was significantly lower than HbA1c before the start of SAP (7.5 ± 0.9% vs 7.0 ± 0.7%, p = 0.001) (Figure 1)

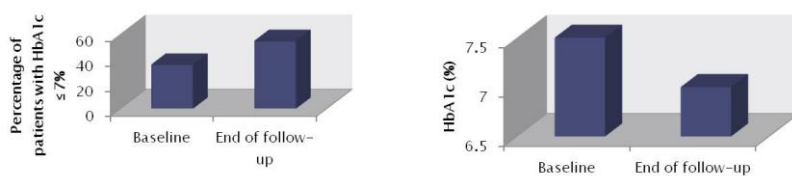


Figure 1. Changes in percentage of patients with HbA1c ≤ 7% (Left) and changes in HbA1c from baseline to end of follow-up (Right) (both p = 0.001)

In the group of patients with baseline HbA1c > 7% (n = 52), HbA1c was reduced from 8.0 ± 0.1% to 7.3 ± 0.1% (p = 0.001), 81% of the patients improved their HbA1c and end-of-follow-up HbA1c was significantly lower when different groups of age, time on SAP and previous and current treatment were analysed (Table 2)

Table 2. Changes in HbA1c from baseline to end of follow-up in patients with baseline HbA1c > 7%

	Baseline HbA1c (%)	End-of-follow-up HbA1c (%)	n	p
Age				
≤ 18 years-old	7.9 ± 0.8	7.5 ± 0.6	9	0.189
> 18 years-old	8.0 ± 0.6	7.2 ± 0.1	43	0.001
Time on SAP				
< 12 months	7.6 ± 0.4	7.2 ± 0.6	18	0.004
≥ 12 months	8.2 ± 0.7	7.4 ± 0.6	34	0.001
Treatment before SAP				
MDI + SMBG	8.2 ± 0.6	7.2 ± 0.6	29	0.001
Pump + SMBG	7.7 ± 0.4	7.3 ± 0.6	18	0.030
MDI + CGM	8.2 ± 0.7	7.0 ± 0.6	3	0.022
SAP				
MiniMed 640G® + Enlite (with LGS)	8.1 ± 0.7	7.4 ± 0.6	32	0.001
MiniMed Paradigm® VEO™ + Enlite (with PLS)	7.9 ± 0.4	7.2 ± 0.6	18	0.001
Animas vibe® + DexcomG4®	7.5 ± 0.4	6.7 ± 0.3	2	0.042

(N = 52). Data are expressed as mean ± standard deviation. SAP: sensor-augmented pump therapy, MDI: multiple daily injections, SMBG: self-monitoring of blood glucose, CGM: continuous glucose monitoring, LGS: low-glucose suspend function, PLS: predictive low-glucose suspend feature

Conclusion

Sensor-augmented pump therapy provides a sustained improvement in glycaemic control in real-life clinical practice in children and adults with T1DM