Parity increases insulin requirements in pregnant women with type 1 diabetes

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AIM

The aim of the current study was to evaluate the insulin requirements in women with type 1 diabetes during pregnancy and to test whether parity affects insulin requirements.

METHODS

We conducted an observational cohort study consisting of women with type 1 diabetes who gave birth at Aarhus University Hospital from 2004-2014. Daily insulin requirements and HbA1c were collected from every visit during pregnancy.

RESULTS

Table 1: Demographics of type 1 diabetes patients included in the study

Participants	n	380
Births	n	536
Repeaters	n	236 once, 132 twice, 12 thrice
		P1P2P3P3+4All
Parity	n	2292167516536
Parity	%	43%40%14%3%100%
Age	y	29.132.033.636.731.1
BMI	#	25.224.924.726.925.1
HbA1c ^a	%	7.6%7.5%7.8%8.1%7.6%
HbA1c	mmol/L	59.758.662.065.059.8
Duration ^b	y	14.415.616.712.815.2

Figure 2: Difference in mean daily insulin requirement between parity groups

Figure 1: Mean daily insulin requirements in % relative to pre-pregnancy levels

Table 2: Comparison of insulin requirement between parity groups

Unadjusted				Adjusted for BMI			
	P1	P2	P3+4		P1	P2	P3+4
P0	+9% ^c (4.3 - 13.6)	+12% ^c (3.9 - 20.4)	+23% ^c (4.9 - 43.8)	P0	+8% ^c (3.4 - 12)	+10% ^c (3.2 - 18.3)	+17% ^c (1.5 - 35.6)
P1		+3% ^c (-4.2 - 10.1)	+13% ^c (-3.6 - 32)	P1		+3% ^c (-3.7 - 9.5)	+9% ^c (-5.6 - 26)
P2			+10% ^c (-5.8 - 28.1)	P2			+6% ^c (-9.6 - 22.4)
Adjusted for BMI and Age				Adjusted for BMI, Age and HbA1c ^a			
	P1	P2	P3+4		P1	P2	P3+4
P0	+15% ^c (9.9 - 20.3)	+25% ^c (15.2 - 34.6)	40% ^c (20.0 - 64.6)	P0	+13% ^c (8.2 - 18.3)	+21% ^c (11.5 - 30.2)	+34% ^c (15.5 - 56.3)
P1		+8% ^c (1.4 - 15.7)	+22% ^c (5.1 - 41.2)	P1		+6% ^c (-0.3 - 13.7)	+19% ^c (2.8 - 37.1)
P2			+12% ^c (-2.4 - 29.6)	P2			+11% ^c (-2.9 - 28.0)
Adjusted for BMI, Age, HbA1c ^a and DD ^b							
	P1	P2	P3+4				
P0	+13% ^c (8.1 - 18.2)	+20% ^c (11.5 - 30.1)	+36% ^c (16.8 - 58.1)				
P1		+7% ^c (-0.2 - 13.8)	+20% ^c (4.1 - 38.9)				
P2			+13% ^c (-1.7 - 29.6)				

^a Pre-pregnancy HbA1c ^b Duration of diabetes ^c Statistically significant

CONCLUSION

Our data show that **parity per se increases insulin requirements** during pregnancy **between 9 and 36%** in type 1 diabetes and confirm that insulin dosages exhibit a **characteristic pattern** with a modest **early decrease and a pronounced late increase during pregnancy**. This provides valuable information to achieve tight glycemic control throughout pregnancy. **Being the first report to show this, our findings may have straight clinical implications for pregnant type 1 diabetes patients.**

ACKNOWLEDGEMENTS

Danish Diabetes Academy

Funded by the Novo Nordisk Foundation

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