

DOES HYPERGLYCEMIA IN PREGNANCY CHANGE THE PELVIC FLOOR MUSCLES FUNCTION?

Hypothesis / aims of study

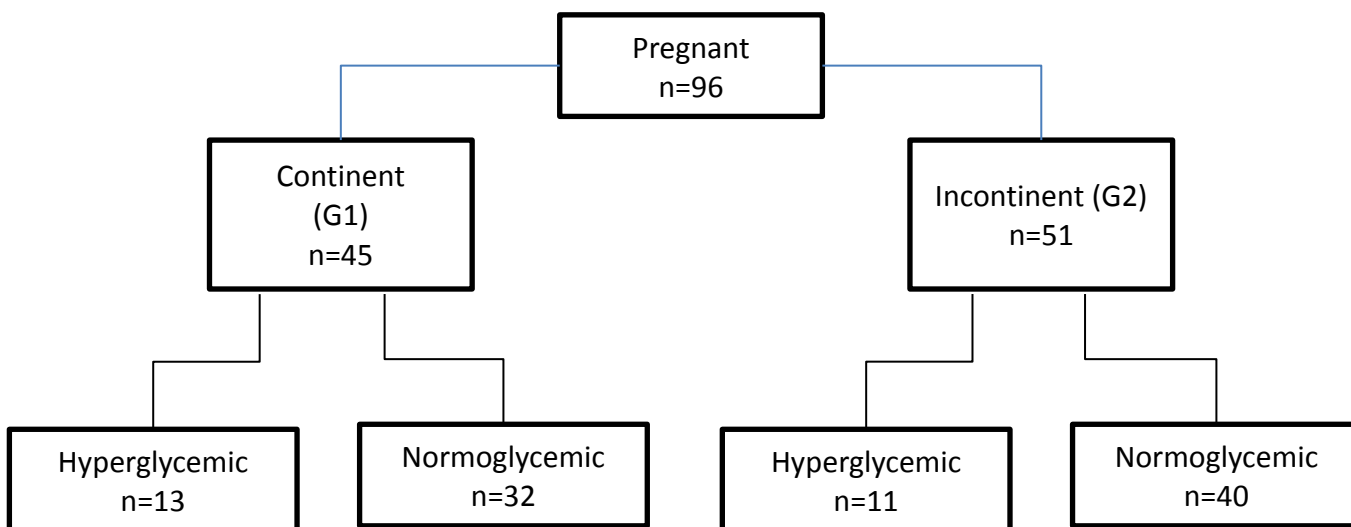
The aim of this study was to evaluate the influence of gestational glycemic disturbances in the pelvic floor muscles.

Study design, materials and methods

We carried out a transversal research with hyperglycemic and normoglycemic pregnant, subdivided according the presence of urinary incontinency (Figure 1). Written informed consent was obtained from all pregnant in the study. PF assessment was carried out in primiparous and multiparous women (with up to two Cesarean deliveries) between 24 and 32 weeks of pregnancy. Those women who underwent vaginal delivery were excluded. All the pregnant has taken an oral overcharge test with 75g of glucosis and the glycemic profile (maternal plasmatic glycemic evaluation for every two hours, between 8am and 6pm). When at least one altered test was observed, the affected pregnant was classified as hyperglycemic. Examinations were performed using a two-channel Miotec electromyograph, Miotool model, with software MioGraph 2.0, following the standards of International Society of Electrophysiology and Kinesiology (ISEK). The probe was introduced through the vaginal introitus using hydrosoluble gel as lubricant while the subject remained in gynecological position. The areas where electrodes would be placed were cleaned with 70% alcohol and shaved. Surface electrodes were fixed to the thigh adductors so that the activity of the accessory muscles could be simultaneously recorded during the contraction of PF muscles, and another electrode was applied for reference on the anterior superior iliac crest. Disposable, double-sided, bipolar solid gel (Ag/AgCl) surface electrodes made of polyethylene foam with medical hypoallergenic adhesive were used with a 20-mm distance between edges. For reference, a disposable solid gel Meditrace 100 Ag/AgCl electrode was used. Muscle activity at rest (baseline) was observed for 30s, after which subjects were asked to perform three fast contractions followed by three sustained contractions at 5s intervals. Subsequently, baseline activity was once more recorded for 30s. Data were processed in RMS with a band-pass filter of 20-500Hz. All values were recorded in μV .

96 pregnant women were allocated into two groups: G1 consisting of 45 continent participants and G2 including 51 incontinent subjects. Those two groups were subdivided according to the presence of hyperglycemia alterations.

Figure 1: Flow chart of groups distribution.



Results

In G1 and G2 the Median age was of 26 for normoglycemic and of 29 years for hyperglycemic pregnant. Body Mass Indexes (BMI) was classified according to Atalah (1997) (Table 1). Differences in age were not statistically significant. EMG findings are shown in Table 2. The observed data distribution was normal, and t-Student test was applied to compare it.

Table 1: Body Mass Indexes (BMI) in the groups.

		OBESITY n (%)	OVERWEIGHT n (%)	ADEQUATE n (%)	LOW WEIGHT n (%)	TOTAL n (%)
CONT (G1)	NG	9 (28.1)	14 (43.8)	7(21.9)	2(6.3)	32 (100)
	HG	4 (30.8)	6 (46.2)	2 (15.4)	1(7.7)	13 (100)
INCONT (G2)	NG	11 (27.5)	16 (40)	10 (25)	3 (7.5)	40 (100)
	HG	2 (18.2)	9 (81.8)	0 (0)	0 (0)	11 (100)

Table 2: Electromyographic findings, maximum amplitude media (μV) during PF Fast and Sustained Contractions.

		Fast Contractions	Sustained Contractions	p-value
CONT (G1)	NG	15.461	13.528	0.42
	HG	14.821	14.869	0.232
INCONT (G2)	NG	15.529	12.902	0.295
	HG	13.433	12.67	0.495

Interpretation of results

The results demonstrated a larger variation among normoglycemics and hyperglycemics in the Incontinence group; however the result was not statistically significant. Given that studies using EMG for PF assessment in pregnant women are scarce, direct comparison of our results with those obtained by others was not possible. According to Kim et al., 2008 the urinary incontinence is common among women with gestational diabetes mellitus (GDM), but not appear to be associated with BMI.

Concluding message

In this study, no significant difference measured by electromyography was observed between continent and incontinent groups, subdivided according to hyperglycemic alterations, during fast or sustained contractions.

References

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2. Kim C, McEwen LN, Sarma AV, Piette JD, Herman WH. Stress urinary incontinence in women with a history of gestational diabetes mellitus. Journal of Women's Health. 2008;17(5):783-92
3. Merletti, R. Standards for Reporting EMG data. Journal of Electromyography and Kinesiology, 1999;9(1):III-IV

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Is this a clinical trial?	No
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Was this study approved by an ethics committee?	Yes
Specify Name of Ethics Committee	Botucatu Medical School Ethics Board
Was the Declaration of Helsinki followed?	Yes
Was informed consent obtained from the patients?	Yes