U.O. DIABETOLOGIA E
NUTRIZIONE CLINICA

IL FOLLOW UP: UN'OPPORTUNITA' PERSA?

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PUNTO DI PARTENZA……

- Studi di corte hanno dimostrato che le donne con precedente GDM hanno più veloce deterioramento della capacità secretoria delle β-cellule e della sensibilità periferica all'insulina rispetto alle donne senza pregresso GDM

- Quindi le donne con storia di GDM hanno un elevato rischio di sviluppare un diabete post partum e possono diventare diabetiche ad una età più precoce rispetto alle donne che non hanno avuto GDM

- Le alterazioni metaboliche dopo GDM prevedono anche dislipidemia e alterazioni vascolari

DIABETE POST PARTO NELLE DONNE CON PRECEDENTE GDM

Incidenza:

- Incidenza cumulativa a 5 anni 50% (Metzger et al. Diab. Care 1993)

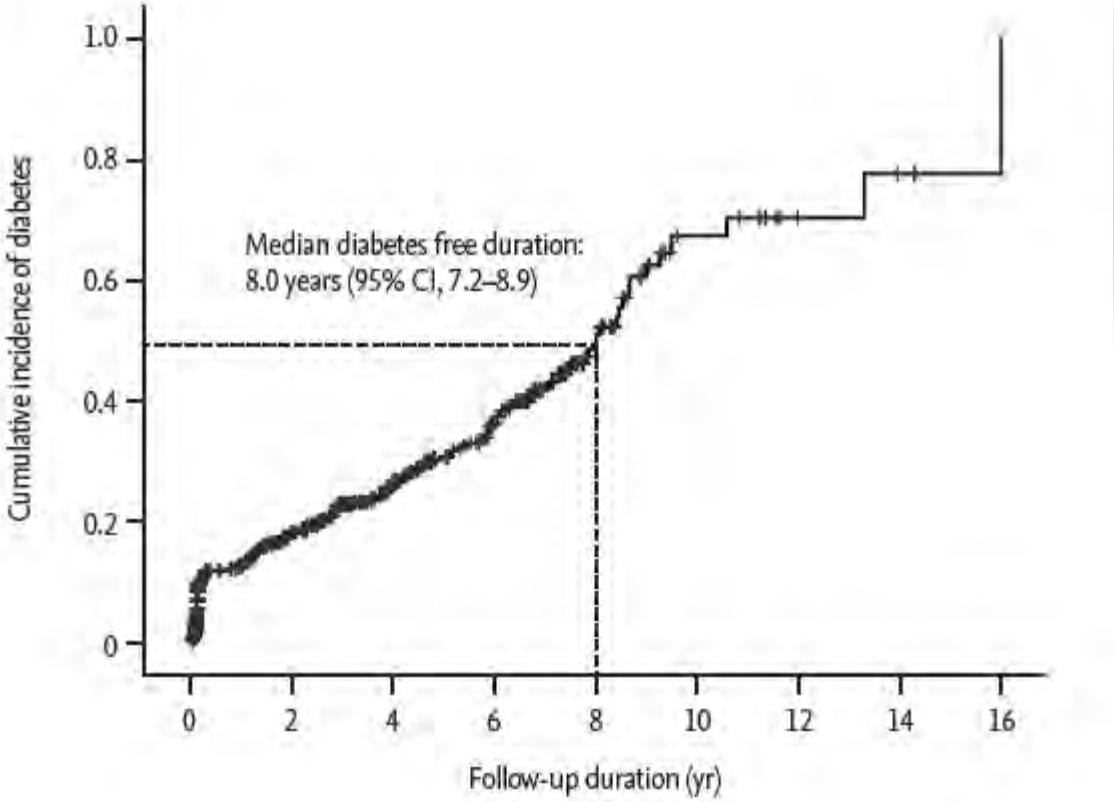
- 32.8% di donne con precedente GDM caucasiche in Canada a 3 mesi dal parto IGT o diabete (Retnakaran et al. Diab. Care 2008)

- Studio svedese retrospettivo incidenza del 35% di diabete in donne con precedente GDM in un periodo di follow up di 15 anni (LinneY. Et al. BJOG 2002)

- Bellamy et al. (Lancet 2009) ha pubblicato una review su studi di corte dimostrando che nelle donne con GDM comparate con donne con normogicemia in gravidanza il rischio di diabete post parto è 7 volte più alto

- Studio di corte condotto in Corea riporta incidenza cumulativa di diabete post parto del 23.8% in un periodo di 4 anni ed una incidenza attesa a 8 anni del 58% nelle donne con precedente GDM (Kwak et al. J.Clin.Endocrinol.Metab. 2013)

DIABETE POST PARTO NELLE DONNE CON PRECEDENTE GDM



Incidenza cumulativa di diabete tipo 2 nelle donne con precedente GDM
JClin EndocrinolMetab 2013;98:E744-E753 KwakSH et al

SCREENING POST PARTO DELLO STATO DI TOLLERANZA AI CARBOIDRATI

- Le donne con precedente GDM vengono incoraggiate ad effettuare lo screening per l'intolleranza ai carboidrati o il diabete manifesto

- La misurazione della glicemia a digiuno si è dimostrata insufficiente a questo scopo

- Soltanto circa il 25% delle donne con GDM si sottopongono allo screening 6-12 settimane dopo il parto

- Vari sono i fattori che ostacolano lo screening post parto: tempo, stress emozionale provocato dalla gestione del neonoto, timore della diagnosi di diabete

- Le donne GAD positive hanno un aumentato rischio di sviluppare un diabete post parto

DIABETE POST PARTO NELLE DONNE CON PRECEDENTE GDM

Fattori di rischio:

• Fattori genetici (GDM e diabete post parto non sono malattie diverse, esiste un continuum nelle donne predisposte ad insufficiente capacità β cellulare)

•Fattori di rischio ambientali (età, familiarità per diabete, iperglicemia in gravidanza, trattamento insulinico durante la gravidanza, BMI pregravidanza e postpartum)

PREVENZIONE DEL DIABETE POST PARTO NELLE DONNE CON PRECEDENTE GDM

- Alcuni dei fattori di rischio citati non sono modificabili: familiarità, età, livelli glicemici durante la gravidanza.

- Fattori di rischio modificabili: riduzione del peso post parto, dieta adeguata, attività fisica, allattamento al seno.

Table 1. Summary of representative studies for modifiable risk factors of postpartum diabetes

	Study	Ethnicity	Study subjects	Mean age (baseline), yr	Independent variable	Follow-up duration	Major findings
Obesity	Peters et al. [70]	Hispanic	666 Women with previous GDM	30	Postpartum weight change	Mean 22 mon	Postpartum weight gain (10 lb) increased risk of postpartum diabetes by 1.95-fold
	Bao et al. [46]	Mostly Caucasians	1,695 Women with a history of GDM from Nurses' Health Study II	~40	Baseline BMI, most recent BMI, postpartum weight gain	1991 to 2009 (median 14.0 yr)	Each 1 kg/m^2 (~2.6 kg) increase in baseline BMI and most recent BMI increased postpartum diabetes by 16% and 16%. Each 5 kg increment of postpartum weight gain increased postpartum diabetes by 27%.
	Moon et al. [45]	Korean	418 Women with previous GDM or gestational impaired glucose tolerance	32	Postpartum BMI change	Median 4.0 yr	Each 1 kg/m^2 (~2.6 kg) increase in postpartum BMI change increases postpartum diabetes by 27%. Subjects in highest tertile (1.8 kg/m^2) had 2 times higher risk of postpartum diabetes and worsened blood pressure and lipid profile compared to subjects in lowest tertile (–1.6 kg/m^2)
Diet	Tobias et al. [76]	Mostly Caucasians	4,413 Women with a history of GDM from Nurses' Health Study II	38	aMED, DASH, aHEI	1991 to 2005	Adherence to healthy diet (highest quartile of aMED, DASH, aHEI) had 40%, 46%, and 57% decreased risk of postpartum diabetes
Physical activity	Bao et al. [79]	Mostly Caucasians	4,554 Women with a history of GDM from Nurses' Health Study II	38	Physical activity (MET-hour/week)	1991 to 2007	Higher physical activity (5 MET-hour/week or 100 minutes/week of moderate-intensity physical activity) decreased postpartum diabetes by 9%. Increase in physical activity during follow-up (7.5 MET-hour/week or 150 minutes/week of moderate-intensity physical activity) decreased postpartum diabetes by 47%.
Breastfeeding	Ziegler et al. [82]	German	304 Women with previous GDM	31	Breastfeeding (and duration)	Up to 19 yr	Median time to postpartum diabetes was 12.3 years for women who breastfed vs. 2.3 years for women who did not breastfeed. Women who breastfed for > 3 months had lower risk of diabetes than women who breastfed for ≤ 3 months (p = 0.029)

GDM, gestational diabetes mellitus; BMI, body mass index; aMED, alternate Mediterranean diet; DASH, Dietary Approaches to Stop Hypertension; aHEI, alternate Healthy Eating Index; MET, metabolic equivalent of task.

Table 2. Summary of interventional trials for prevention of postpartum diabetes

Study	Study design	Study subjects	Mean age (baseline)	Intervention	Follow-up duration	Major findings
TRIPOD [98]	Intervention	High risk Hispanic women with previous GDM in the previous 4 years (266 women were randomized 1:1 to either troglitazone or placebo)	34 yr	Troglitazone 400 mg/day	Median 30 mon	Annual diabetes incidence rate during postpartum was 12.1 and 5.4%/year in women assigned to placebo and troglitazone, respectively. Troglitazone group showed reduction in endogenous insulin secretion (measured by IVGTT at 3 month).
PIPOD [99]	Intervention	95 women who were not diabetic at the end of TRIPOD study	39 yr	Pioglitazone 30 mg/day, then increased to 45 mg/day	Median 35.9 mon	Annual diabetes incidence rate during postpartum was 4.6%/year, which was much lower than 12.1%/year in placebo group in TRIPOD study. Pioglitazone stopped the decline in β-cell function that occurred during placebo treatment in the TRIPOD study.
DPPOS [100]	*Post hoc* analysis of DPP	350 women with previous GDM and 1416 women with previous live births (DPP initially enrolled high risk subjects with impaired glucose tolerance)	43 and 51 yr for women with and without previous history of GDM, respectively	ILS vs. metformin (850 mg twice a day) vs. placebo	10 yr	ILS reduced incidence of diabetes compared with placebo by 40% (11.4 and 7.6/100 person-years in placebo and ILS, respectively).
DEBI [101]	Intervention	197 women with GDM (enrolled during pregnancy)	Not available	Diet, exercise and breastfeeding Intervention	1 yr	Higher proportion of women reached postpartum weight goal who underwent intervention (37.5 vs. 21.4%, $p = 0.07$). The intervention decreased dietary fat intake and increased breastfeeding.
Chinese study [103]	Intervention	450 Chinese women with either impaired glucose tolerance or diabetes by 75 g OGTT during pregnancy	39 yr	Dietary advice and exercise	3 yr	Fewer women developed diabetes who underwent lifestyle intervention (15% vs. 19%, *p* value not given). BMI, systolic and diastolic blood pressure, and triglyceride concentration were lower with intervention.

TRIPOD, The Troglitazone in Prevention of Diabetes; GDM, gestational diabetes mellitus; IVGTT, intravenous glucose tolerance test; PIPOD, The Pioglitazone in Prevention of Diabetes; DPPOS, Diabetes Prevention Program Outcomes Study; DPP, Diabetes Prevention Program; ILS, intensive lifestyle intervention; DEBI, Diet, Exercise, and Breastfeeding Intervention; OGTT, oral glucose tolerance test; BMI, body mass index.

FOLLOW UP DEL DIABETE GESTAZIONALE