Pregnancy in women with type 2 diabetes: an uncertain prognosis

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SUMMARY
The increasing prevalence of type 2 diabetes in women of childbearing age leads to an increasing number of pregnant women with type 2 diabetes. Pregnancy complicated by type 2 diabetes is a high-risk pregnancy, associated with birth defects and high perinatal mortality to the same extent as in type 1 diabetes. Until now, most attention was directed toward women with type 1 diabetes. Recent data stresses the urgent need to develop better screening and efficient care strategies in women with type 2 diabetes, who also display many risk factors for adverse fetal outcome. Family physicians, diabetologists and gynaecologists must be aware of this growing concern. Improvement of pregnancy planning, adequate metabolic control from conception to delivery and a multi-disciplinary team approach to care should improve fetal and maternal outcomes. Furthermore, diabetes screening in high-risk women prior to pregnancy is warranted.

Key-words: Pregnancy - Type 2 diabetes mellitus - Perinatal mortality - Congenital anomaly.

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RESUME
La grossesse chez les femmes diabetiques de type 2 : un prognostic incertain
L’émergence du diabète de type 2 dans une population en âge de procréer conduit à la prise en charge croissante de grossesses compliquées d’un diabète de type 2. Comme dans le diabète de type 1, elles constituent des grossesses à haut risque en terme de malformations congénitales et de mortalité périnatale. Si jusqu’à présent les efforts se sont presque exclusivement concentrés sur les patientes présentant un diabète de type 1, des données récentes soulignent l’urgence de prêter attention aux patientes présentant un diabète de type 2 qui cumulent par ailleurs les facteurs de risque périnatal. Les médecins généralistes, les diabétologues et les gynécologues doivent être informés et mobilisés dans la prévention du risque maternel et foetal. Des efforts conséquents doivent être engagés pour favoriser la programmation des grossesses, l’obtention d’un équilibre glycémique optimal depuis la période pré-conceptionnelle jusqu’à l’accouchement et une prise en charge multidisciplinaire. De plus, il est recommandé de dépister le diabète chez les femmes à risque avant la grossesse.

Mots-clés : Grossesse - Diabète de type 2 - Mortalité périnatale - Malformations congénitales.

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n spite of the great improvement in fetal outcome
over the past 30 years, pregnancy complicated by
pre-existent diabetes mellitus remains a high-risk
pregnancy [1]. In population studies, the malformation rate
is still higher with a 3 to 10-fold increase risk compared with
the general population. Furthermore, these congenital mal-
formations contribute predominantly to the excess perinatal
mortality. The role of periconceptional glycemic control is
well established in deficient organogenesis and we know the
major influence of effective pregnancy planning in reduc-
tion of fetal risks [2]. Up to now, most attention was directed
toward women with type 1 diabetes. However, the increas-
ing prevalence of type 2 diabetes in young population, es-
specially in women of childbearing age [3], and the trend to-
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specially in women of childbearing age [3], and the trend to-
ward older women giving birth, lead to a growing number
of pregnant women with type 2 diabetes [4]. Recent studies
emphasise adverse fetal outcome in pregnancy complicated
by type 2 diabetes, as well as maternal morbidities; they stress
the urgent need to develop better screening and efficient care
strategies [5].

Epidemiology

It is difficult to estimate the true prevalence of type 2
diabetes in pregnancy for several reasons. First, many pa-
tients with gestational diabetes (GD) are likely to have
prepregnancy type 2 diabetes, particularly those who are di-
agnosed before 20 weeks of gestation or who have fasting
hyperglycemia and those with diabetes persisting on early
postpartum testing. Second, without universal screening for
GD, type 2 diabetes might go undiagnosed throughout preg-
nancy. A third limitation is the scarceness of prospective
studies. Nevertheless, pregnancy complicated by type 2 is
obviously more common that previously believed. In a re-
cent French multicentric survey, about 34% of women with
prepregnancy diabetes had type 2 diabetes [6]. For specific
populations in which the prevalence of type 2 is particularly
frequent, more than half of the pregnant diabetic women
could in fact have type 2 diabetes [4], as it was reported in a
Japanese study where type 2 accounted for about 70%
[7]. This trend could soon be observed in caucasian popula-
tion in which type 2 diabetes is now diagnosed earlier than
before. In pregnant Native Canadians, the overall preva-
ience of diabetes (type 2 and GD) was 11.6% with a type 2
prevalence of 3.2%. Prevalence rates increased with age,
peaking at 46.9% in the age-group ≥ 35 years [8]. Only one
study has measured the prevalence of type 2 diabetes during
pregnancy, not in a selected population, but in a nationwide
population based survey. In this report, the authors esti-
mated that in 1988, 0.5% of all pregnancies in the US were
complicated by pregestational diabetes and that type 2 ac-
counted for 65% of them, compared with only 26% in 1980
[9]. GD was present in 3.5% of all pregnancies.

Maternal characteristics

Pregnant women with type 2 diabetes differ from those
with type 1 disease in a number of characteristics, each of
which may be related to pregnancy outcome, including ma-
ternal age, maternal weight and parity. They tend to be
older, heavier, of greater parity [10, 11]. Indeed, beyond dia-
betes, pregnant women with type 2 diabetes display many
risk factors for fetal adverse outcome. In particular, mater-
nal age and obesity are both associated with an increased risk
of perinatal mortality [12]. Furthermore, in many countries
type 2 diabetes is associated with low socioeconomic status
which may confer added risk [11, 13].

One study has studied the prevalence of maternal diabe-
tes complications [7]. Surprisingly, it was similar between
mothers with type 1 and type 2 diabetes. Non proliferative
retinopathy was seen in 28% of women with type 2 while
proliferative retinopathy was present in 4.3%, often detected
for the first time during pregnancy. Therefore, as in women
with type 1 diabetes, complications must be carefully as-
essed before and throughout pregnancy in type 2.

Pre-eclampsia is 2 to 3 times more common in women
with type 2 diabetes than in non diabetic women [5, 13], as
quite high as in women with type 1 diabetes [14]. If hyper-
tensive disorders of pregnancy are related to diabetes dura-
tion and pre-existing nephropathy in type 1 diabetes, obesity
and insulin resistance could play a role in type 2 [15].

Fetal complications

Because of lack of preconceptional optimal care, type 2
diabetes is associated with an increased risk for major con-
genital anomalies, that is mostly in the range reported for
pregnancies complicated by type 1 diabetes [5, 11, 16].
Dunne has recently reported that women with type 2 diabe-
tes have up to a 11 times greater risk of a congenital malfor-
mation compared with the general population [5]. These
congenital anomalies affect the same organ systems that
have been previously described in pregnancies complicated
by type 1 diabetes. The most commonly affected organ sys-
tems are the cardiac, musculoskeletal and central nervous
systems and anomalies involving multiple organ systems
[17]. The risk in individual patients appears to be related to
poor maternal glycemic control during the critical period of
organogenesis, rather than to the mode of antidiabetic
therapy during early pregnancy [18]. Shafer-Graf et al. have
proposed the threshold of an initial fasting glucose level of
120 mg/dL to assess clinical risks for embryogenesis [17]. In
addition, poor attendance for pre-pregnancy care and late
booking for antenatal care may contribute to these adverse
outcomes [10, 19].

Perinatal mortality is substantially higher than that in the
general population, mainly owing to an excess of late fetal
death (increased seven-fold) in a large cohort of women
from New Zealand [11]. In that study, maternal obesity may
Conclusions

The increasing prevalence of type 2 diabetes in women of childbearing age leads to a growing number of pregnant women with type 2 diabetes. Pregnancy complicated by type 2 diabetes is a high-risk pregnancy, associated with birth defects and fetal death to the same extent as type 1 diabetes. Such problem underlines one more time the urgent need to develop strategies to prevent obesity, insulin resistance and diabetes in young populations. Efficient pre-pregnancy care needs to be strongly encouraged in women with type 2 diabetes who also display many risk factors for adverse fetal outcome. Family physicians who see these patients before pregnancy must be aware of this growing concern and involved in the prevention of fetal and maternal risks. Improvement of pregnancy planning, adequate metabolic control from conception to delivery and a multi-disciplinary team approach to care are warranted. Furthermore, diabetes screening in high-risk women prior to pregnancy should contribute to improve fetal and maternal outcomes.

References


