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Obs and Gynae PG Focus Series

Gestational Diabetes Mellitus



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CHAPTER

Introduction

In the era of newly emerging infectious pandemics, diabetes remains the endocrinologic pandemic owing to a sedentary lifestyle, lack of activity, and unhealthy eating habits. Pregnancy being a diabetogenic state subjects a large proportion of the population to adverse maternal and perinatal morbidity. The International Association of Diabetes and Pregnancy Study Groups (IADPSG) and the World Health Organization (WHO) have classified hyperglycemia in pregnancy (HIP) into three categories:

1. Pregestational diabetes
2. Overt diabetes in pregnancy (DIP)
3. Gestational diabetes mellitus (GDM)

Gestational diabetes mellitus is currently defined as any degree of glucose intolerance with onset or first recognition during pregnancy.

Gestational diabetes mellitus arises due to insulin resistance that develops during pregnancy secondary to the action of pregnancy-specific hormones. Clinically GDM ranges from asymptomatic to severe hyperglycemia and its complications. GDM is associated with an increased risk of short-term as well as long-term adverse effects for both mother and baby and hence its diagnosis and adequate treatment are of prime importance. Women with GDM are at an increased risk of developing type 2 diabetes mellitus (DM) 5–6 years after pregnancy while babies born to such mothers have the risk of becoming obese in their adulthood with further risk of development of type 2 DM.

HISTORY

The history of diabetes mellitus dates back to 1500 BC. when it was described in the Egyptian Ebers Papyrus.[1] In 1824 Bennewitz in Germany described the first clinical case of a woman with intensive thirst and recurrent glycosuria in three successive pregnancies. One of her babies weighed almost 5.5 kg and her urine contained a big amount of saccharine matter.[2] In 1945, Miller reported the first observations of obstetrical complications in the prediabetic period.[3] In the 1950s the risk factors for the development of abnormalities in carbohydrate metabolism in pregnancy were defined and the term GDM became accepted. Being overweight, obese, and of non-European ethnicity along with a history of GDM in a previous pregnancy,

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history of diabetes, previous stillbirth, macrosomia, and polycystic ovarian syndrome are major risk factors for HIP.

EPIDEMIOLOGY

Presently, the International Diabetes Federation 2019 estimates 20.4 million global live births (15.8%) to women with HIP.[4] Pregestational diabetes affects 1–5% of people worldwide and has been on the rise in women aged >40 years. Owing to the lower standard fertility ratio in women with type 1 diabetes, the prevalence of type 1 diabetes in nonpregnant women is more than that in pregnancy. Type 1 DM complicates about 0.3–0.8% of pregnancies; type 2 DM affects the remaining patients, and a tiny percentage has uncommon forms of the disease. DIP is prevalent in 0.2–4% of cases, primarily postpartum type 2 DM.

INDIAN PERSPECTIVE

There is wide variability in the reported prevalence rate for GDM in India, varying from <4% to nearly 18%. The overall prevalence is approximately 7%, higher in urban versus rural areas, among older age groups, and higher socioeconomic status (SES) groups.[5] The prevalence of gestational diabetes has been reported to range from 3.8% in Kashmir to 6.2% in Mysore, 9.5% in Western India, and 17.9% in Tamil Nadu.[6] The wide variation of prevalence in India can be attributed to the wide differences in the dietary habits, living conditions, and socioeconomic levels of the population in different states of the country. The incidence of GDM is expected to increase to 20%, i.e., one in every five pregnant women is likely to have GDM.

The increasing prevalence of HIP has a significant impact on public health expenditure required for both diagnosis and management of the disease and its complications.

REFERENCES

1. Karamanou M, Protogerou A, Tsoucalas G, Androutsos G, Poulakou-Rebelakou E. Milestones in the history of diabetes mellitus: The main contributors. World J Diabetes. 2016;7(1):1-7.
2. Hadden DR, Hillebrand B. The first recorded case of diabetic pregnancy (Bennewitz HG, 1824, University of Berlin). Diabetologia. 1989;32(8):625.
3. Miller HC. The effect of the prediabetic state on the survival of the fetus and the birth weight of the newborn infant. N Engl J Med. 1945;233:376-8.
4. International Diabetes Federation. IDF Diabetes Atlas, 9th edition. Belgium: International Diabetes Federation; 2019. p. 168.
5. Swaminathan G, Swaminathan A, Corsi DJ. Prevalence of Gestational Diabetes in India by Individual Socioeconomic, Demographic, and Clinical Factors. JAMA Netw Open. 2020;3(11):e2025074.
6. Mithal A, Bansal B, Kalra S. Gestational diabetes in India: Science and society. Indian J Endocrinol Metab. 2015;19(6):701-4.

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The PG Focus Series is a collection of books that aims to provide in-depth insights and practical knowledge on specific topics. These books are designed for readers who want to deepen their understanding or enhance their skills in a particular area, whether it is exam preparation, personal development, professional growth, or specialized subjects. These also include case studies and multiple-choice questions.

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