http://jmscr.igmpublication.org/home/
ISSN (e)-2347-176x ISSN (p) 2455-0450
crossref DOI: https://dx.doi.org/10.18535/jmscr/v9i2.39

IGM Publication
Journal Of Medical Science And Clinical Research
An Official Publication Of IGM Publication

Prevalence of Gestational Diabetes Mellitus in a Hospital Based Sample of Pregnant Kashmiri Women Attending Antenatal OPD in Skims

Authors
Dr Shazia Nisar[1], Dr Shahid Bashir[2]
[1]Senoir Resident Department of Obstetric and Gynecology Skims
[2]Senoir Resident Department of Peadatric Surgery Skims

Abstract
There are significant changes in carbohydrate metabolism during pregnancy. During Pregnancy insulin resistance increases because of secreation of large number of counter regulatory hormone like human placental lactogen, cortisol, oestrogen, progesterone and also there is destruction of insulin by placenta, as a result this changes there is maternal hyperglycemia, reduced conversation of glucose to glycogen, all these things result in uninterrupted supply of glucose to fetus. If in mother these changes are more pronounced that result gestational diabetes mellitus. It may occur first time in pregnancy or may be first time noticed in pregnancy were it is known as pregestatational diabetes. Our study is aimed to know the prevelance of diabetes in zone of Kashmir belt.
Results: *The prevelance of diabetes in our study is 13%.The standard method of diagnosis being two step procedure where in first step screening is done by DIPSI with 75gm glucose if abnormal this is followed by 3 hour OGTT.*
Conclusion: *Since the prevelance of Gestational diabetes in our belt of Kashmir is high so I recommend routine screening of all women with DIPSI at 24_28 weeks of gestation followed by 3 hour OGTT if DIPSI was abnormal.*

Introduction

There are significant changes in carbohydrate tolerance during pregnancy. During pregnancy insulin demand increases while as secretion of many sex hormones increases that lead to development of insulin resistance, especially during second half of pregnancy and increases till term. This insulin resistance is also because of hormonesthat antagonise the action of insulin that includes oestrogen, progesterone, human placental lactogen, cortisol and because of destruction of insulin by placenta and kidney. These changes in insulin resistance occur to facilitate transfer of glucose across placenta for normal fetal growth and development. Now if in mother this insulin resistance is more pronounced there is more maternal hyperglycemia and Gestational Diabetes Mellitus may be diagnosed.

Gestational Diabetes Mellitus is defined as carbohydrate intolerance of variable severity with onset or first recognition during pregnancy[(1)]. This definition is used irrespective of use of insulin for treatment of GDM or whether the condition persists after pregnancy. GDM defined in this way includes the women with pre-existing undiagnosed diabetes as well as women with first onset hyperglycemia during pregnancy. GDM varies according to population characteristics:-

- Maternal age
- Ethnicity
- Basal metabolic index
- Screening and
- Diagnostic strategies[(2,3,4)]

Screening and Tests

Screening is the process of identifying women who are at risk of GDM compared to general population of pregnant women. Screening is done between 24 _ 28 weeks of gestation in patients with some of the risk factors for diabetes while as it is done at earliest as possible in those with all risk factors for diabetes. Risk factors for gestational diabetes mellitus includes;

1. Positive family history of diabetes
2. H/o GDM in previous pregnancy
3. H/0 previous baby weighing >4kg
4. H/0 previous unexplained perinatal death
5. Belonging to ethnic group that is at high risk for diabetes.

Screening is done by either Glucose challenge test(GCT) by 50 g of glucoseat 24_28 weeks of gestation irrespective of her last meal, plasma Glucose level >140mg/dl or whole blood>130mg/dl 1hour after GCT is positive screen for GDM.

DIPSI is a Screening method done by administrating 75g of glucose between 24-28 week of gestation[5]. A plasma glucose of more than 140 mg/dl after two hours should be used as threshold and regarded as positive screen

Patients with abnormal screening should be followed by 3 hour GTT with exception of those whose one hour screening test demonstrates plasma glucose more than 200mg/dl. Other patients with abnormal one hour need a 3hour GTT to confirm or rule out diabetes. Normal values of test are below

Upper Limits of 3 Hour Glucose Tolerance Test During Pregnancy Following 100g of Glucose Load (0, sullivan modified by carpenter and Couston)	
FASTING	95
1 HOUR	180
2 HOUR	155
3 HOUR	140

Venous plasma glucose (mg/dl)

Carpenter MW, constant DR

GDM is diagnosed when any two values are met or exceeded.

Criteria for Diagnosis of Impaired Glucose Tolerance and Diabetes with 75g Oral Glucose (WHO)

TIME	Normal tolerance	Impaired Glucose tolerance	Diabetes
Fasting	<100	>100 and <126	>126
2hr post prandial	<140	>140 and <200	>200

Venous whole blood values are 15% less than plasma

mmol/L=mg%×0.0555

International Association of Diabetes and Pregnancy Study Groups (IADPSG) (75g oral Glucose) mg/dl

Time	Value
Fasting	92
1-hour	180
2-hour	155

GDM is diagnosed when one or more thresholds are met or exceeded based on IADPSG.

ADA (American diabetes association 2015 criteria)

Two methods were proposed by ADA for diagnosis of GDM in women without preexisting diabetes;

One Step

Performing OGTT in morning after overnight fasting of 8hours with 75g of Glucose at 24-28 weeks of gestation.GDM is diagnosed when two or more plasma Glucose level equals or exceeds

Fasting serum Glucose=92

1 hour serum Glucose=180
2 hour serum Glucose=153
Two Step Procedures
perform GCT with 50gm of Glucose irrespective of last meal at 24-28 weeks .If plasma Glucose after one hour >140 then proceed to (100 GM Glucose) OGTT.
Step 2 is performed while patient is fasting.GDM is diagnosed when 2 or more values are equated or exceeded.

Fasting =95
1hr=180
2hr=155
3hr=140
ADA recommends selective Screening of at risk women. ACOG recommends universal Screening and NICE guidelines recommends Screening of women of south Asian ethnicity.

Current & Previous Criteria Recommended yo Diagnose GDM (mmol/L)

75 OGTT (Plasma Glucose)	Fasting	1 Hour	2 Hour	3 Hour
IADPSG[a],7 (2010) ADIPS[8] (2013) & WHO[a,9]	>5.1	≥ 10	≥ 8.5	-
WHO[a,10] (1999)	≥ 6.1	-	≥ 7.8	-
[a,11] (2006)	≥ 5.3	≥ 10.0	≥ 8.6	≥ 8.6
ADIPS [a,12] (1998)	≥ 5.5	-	≥8.0	-
100 OGTT (Plasma or Serum Glucose)	Fasting	1 Hour	2 Hour	3 Hour
ACOG[b, 13]	≥ 5.3	≥ 10.0	≥8.6	≥7.8
ACOG[b, 14]	≥ 5.8	≥ 10.6	≥9.2	≥ 8.0
O'Sullivan & Maran [b,15]	≥ 5.0	≥ 9.2	≥ 8.1	≥ 6.9

a- One threshold should be met or exceeded for GDM to be diagnosed.
b- Two thresholds should be met or exceeded for GDM to be diagnosed.

Methodology

It was a cross sectional study done in our hospital of SKIMS Soura for a period of 10 months (December 2017- September 2018). All the pregnant women coming for routine checkups were included in this study. Informed consent was obtained from each patient. Subjects with known DM were excluded from this study.
A sample of 200 patients was taken. Demographic profile (name, age, contact number) was taken. History of any related risk factor, previous history of GDM, previous baby with weight>4kg, family history of diabetes, previous unexplained perinatal loss was taken. Physical examination of patients was done and certain investigations were carried like obestric USG. patients with some of risk factors as mentioned above were subjected to Screening either by GCT or DIPSI at 24 -28 weeks of gestation while as those patients with most of the risk factors were subjected to early Screening either by GCT or DIPSI. Glucose challenge test was done by administering 50g glucose. Plasma Glucose level > 140mg/dl after one hour was regarded as positive screen ,IN DIPSI patients were tested with 75g of Glucose , plasma Glucose level >140 mg/dl 2hr after test was regarded as positive screen. patients with positive screen were subjected to 3 hour OGTT. ACOG/ American College of Obstetricians and Gynaecologists[(6)] recommends that the women with previous history of GDM should be offered diagnostic testing early in pregnancy to identify undiagnosed Type-2 Diabetes. For all the women who are not tested early in pregnancy or who have early negative screen ACOG(6) suggests that Screening for GDM should be done at 24-28 weeks by assessment of medical history, clinical risk factors or laboratory Screening.

Results

Prevalence of GDM in our study was 13% using 75g OGTT. This closely matches to the studies done as below

Prevalence of GDM in Different locations in UK and using different Dx criteria;

FIRST AUTHOR	PUBLICATION YEAR	LOCATION	GDM Dx CRITERIA	NO. OF WOMEN INCLUDED	NO. WITH GDM	PREVELANCE OF GDM
Ali et al (16)	2013	Dublin Dublin	NDDG IADPSG	1375 1679	139 221	10.1 13.2
Dornhorst et al (17)	1992	London(St. Mary's)	Reported in paper	11035	170	1.5
Gregory et al (18)	1998	Cambridge	WHO 1980	3316	67	2.0
Grffin et al (19)	2000	Dublin	NDDG	1299	35	2.7
Janghorbani et al (20)	2006	Plymouth	WHO 1980	4942	90	1.8

Conclusion

Screening and diagnosis and later on treatment reduces adverse maternal and fetal outcome due to GDM.

1) Since the prevalence of GDM in our was 13% so I recommend Screening of all pregnant women at 24-28 weeks gestation f/b GTT in those with abnormal screening.
2) Furthermore those women who have previous history of GDM should undergo Screening early in gestation. Those with negative early Screen should follow repeat testing at 24-28 week gestation.

Bibliography

1. National Diabetes data group. Classification and diagnosis of diabetes mellitus and other categories of glucose intolerance.
2. Farrar D, Fairley L, Santorelli G, etal Association between hyperglycemia and adverse perinatal outcomes in South Asian and white British women: analyisi of data from the in Bradfort cohort
3. Avales GE, Owens LA, Dunne F; Atlantic DIP Collaborators. Applying current screening tools for gestational diabetes mellitus to a European population.
4. Ferrara A. Increasing Prevalence of Gestational Diabetes: a Public Health Perspective.
5. American diabetes Association, Position Statement GDM. Diabetes Care 1995:18(1 suppl): 24S_25S
6. American College of Obstetricians and Gynaecologists Practice bulletin Clinical management guidelines for obstetricians-gynaecologists. Obstet Gynecol clin north Am.2013, 122(2); 406-416.
7. International Association of Diabetes and Pregnancy study groups consensus panel. International Association of Diabetes and Pregnancy Study groups recommendation on the diagnosis and classification of hyperglycemia in pregnancy. Diabetes case- 2010, 33(7): 676-682.
8. Nankernia A, McIntyre H, Moses R etal. ADIPS Consensus guidelines for testing and diagnosis of gestational DM in America.
9. World Health Organisation Diagnostic criteria and classification of hyperglycemia first detected in pregnancy. Geneva: WHO, 2013.
10. World Health Organisation. Definition Diagnosis and classification of DM and its complications. Report of WHO Consultation. Part I: Diagnosis and classification of DM. Geneva: WHO; 1999.
11. American Diabetes Association Diagnosis and classification of DM. Diabetes case. 2006;29 (Suppl. 1): S43-S48.

12. Hoffman L, Nolan C, Wilson J, Oats J, Simmons D. Gestational Diabetes mellitus- management guidelines. The Australasian diabetes in pregnancy. Diabetes1 964; 13- 278-285.
13. American College of obstetricians and gynaecologists . Practice bulletin Clinical management guidelines for obstetricians-gyynaecolcogists. Obstet Gynacol Clin North Am.2013, 122(2);406-416.
14. National diabetes data group. classification and diagnosis of DM and other categories of glucose intolerance. Diabetes. 1979, 28(12);1039-1057.
15. : O Sullivan JB, Mahan CM. Criteria for oral glucose test in pregnancy. Diabetes 1964;13:278-285.
16. Ali FM, Farah N, O' Dwyer v, O Connor C, Kenelly MM, Turner MJ. The impact of new national guidelines on Screening for gestational DM Ir. Med J. 2013;106(2) 57-59.
17. Dornhorst A, Paterson CM, Nicholls Js etal. High prevalence of gestational diabetes in women from ethnic minority groups . diabet Med 1992; 9(9): 820-825.
18. Gregory R, Swinn RA, Wareham N, etal. An audit of comprehensive Screening programme for diabetes in pregnancy. Prac diabetes Int. 1998;15(2): 45-48.
19. Griffin ME, Coffey M, Johnson H, etal. Universal vs risk factor based Screening for gestational diabetes mellitus : detection rates, gestation at diagnosis and outcome .Diabetes Med. 2000; 17(1)26_32
20. Janghorbani M, Stenhouse E, Jones RB, Mellward A. Gestational diabetes mellitus in Plymouth, UK- Prevalence, seasonal variation and associated factors. J Reprod Med. 2006; 51(2): 128-124.

Abbreviations

ACOG- American College of Obstetricians and gynecologists.
ADA – American Diabetes Associations
ADIPS- Australian Diabetes in Pregnancy Society
C&C- Carpenter & Couston
GDM- Gestational Diabetes Mellitus
IADPSG- International Association of Diabetes in Pregnancy Study Groups
NDDG- National Diabetes Data Group
OGTT- Oral Glucose Tolerance Test
WHO- World Health Organisation.