

The background is a dark, textured grey with numerous realistic water droplets of various sizes scattered across it. The droplets have highlights and shadows, giving them a three-dimensional appearance.

IN THE NAME OF GOD

DIABETES MELLITUS IN PREGNANCY

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OB & GYN

PREVALENCE

- APPROXIMATELY **6% TO 9%** OF PREGNANCIES ARE COMPLICATED BY DIABETES THAT
- EITHER DEVELOPS DURING PREGNANCY (**GESTATIONAL DIABETES**) OR WAS ANTECEDENT TO PREGNANCY (**PREGESTATIONAL DIABETES MELLITUS**).
- **PREVALENCE HAS BEEN INCREASING OVER TIME, LIKELY DUE TO INCREASES IN MEAN MATERNAL AGE AND BMI, PARTICULARLY INCREASING OBESITY, AND CHANGES IN SCREENING PRACTICES AND METHODS**

CLASSIFICATION OF DIABETES IN PREGNANCY

- TYPE 1 DIABETES MELLITUS
- TYPE 2 DIABETES MELLITUS

(SIXFOLD INCREASED RISK FOR CONGENITAL ANOMALIES)

- GESTATIONAL DIABETES MELLITUS (GDM)

PHYSIOLOGY OF GLUCOSE METABOLISM IN PREGNANCY

- SEVERAL PREGNANCY-ASSOCIATED HORMONES HAVE A MAJOR EFFECT ON GLUCOSE METABOLISM
- **HUMAN PLACENTAL LACTOGEN (HPL)**
- **ESTROGEN**
- **PROGESTERONE**
- **INSULINASE**

- WITH INCREASED **RENAL BLOOD FLOW**, THE SIMPLE DIFFUSION OF GLUCOSE IN THE GLOMERULUS INCREASES BEYOND THE ABILITY OF TUBULAR REABSORPTION, RESULTING IN THE NORMAL **GLUCOSURIA OF PREGNANCY**, COMMONLY OF APPROXIMATELY **300** MG/DAY.

SIGNIFICANCE

- GDM HAS BEEN ASSOCIATED WITH INCREASED RISKS OF SEVERAL ADVERSE OUTCOMES:
- SHORT-TERM
- LONG-TERM

SHORT-TERM

- **HYPERTENSIVE DISORDERS OF PREGNANCY (PREECLAMPSIA, GESTATIONAL HYPERTENSION)**
- **LARGE FOR GESTATIONAL AGE (LGA) OR MACROSOMIC NEWBORN**
- **POLYHYDRAMNIOS**
- **MEDICALLY-INDICATED PRETERM BIRTH**
- **OPERATIVE BIRTH (CESAREAN, FORCEPS- OR VACUUM-ASSISTED VAGINAL)**
- **SHOULDER DYSTOCIA**
- **MATERNAL AND/OR NEWBORN BIRTH TRAUMA**
- **FETAL/NEONATAL CARDIOMYOPATHY**
- **NEONATAL RESPIRATORY PROBLEMS AND METABOLIC COMPLICATIONS**
- **STILLBIRTH**

LONG-TERM

- **MATERNAL**
- **ADOLESCENT AND ADULT OFFSPRING**

RISK FACTORS

- **PERSONAL HISTORY OF ANY OF THE FOLLOWING:**

- **GDM IN A PREVIOUS PREGNANCY (ASSOCIATED WITH A 40 PERCENT RISK OF RECURRENCE)**

- **IMPAIRED GLUCOSE TOLERANCE**

- **A1C \geq 5.7 PERCENT**

- **ELEVATED FASTING GLUCOSE**

- FAMILY HISTORY OF DIABETES, ESPECIALLY IN A FIRST-DEGREE RELATIVE
- PREPREGNANCY BMI ≥ 30 KG/M²
- MEDICAL CONDITION/SETTING ASSOCIATED WITH DEVELOPMENT OF DIABETES (EG, POLYCYSTIC OVARY SYNDROME [PCOS])
- OLDER MATERNAL AGE (≥ 35 YEARS OF AGE)
- MEMBER WHICH HAVE A HIGH PREVALENCE OF TYPE 2
- PREVIOUS BIRTH OF AN INFANT ≥ 4000 G (APPROXIMATELY 9 POUNDS)

PREGESTATIONAL DIABETES

- APPROXIMATELY 2% OF ALL PREGNANT PATIENTS ARE DIABETIC BEFORE PREGNANCY.
- ULTRASOUND EXAMINATION EARLY IN PREGNANCY
- AT **18 TO 20** WEEKS OF GESTATION, A COMPREHENSIVE ULTRASOUND EXAMINATION SHOULD BE DONE
- ECHOCARDIOGRAPHY
- ANTEPARTUM FETAL MONITORING AT **32-34 WEEKS** : FETAL MOVEMENT COUNTING-NONSTRESS TEST-BIOPHYSICAL PROFILE- CONTRACTION STRESS TEST

MATERNAL COMPLICATIONS

- DKA
- *HYPOGLYCEMIA*
- TWOFOLD INCREASE IN THE INCIDENCE OF PREGNANCY-INDUCED HYPERTENSION, OR **PREECLAMPSIA**
- DIABETIC RETINOPATHY WORSENS IN APPROXIMATELY 15% OF PREGNANT PATIENTS

OUR APPROACH TO EARLY PREGNANCY SCREENING

- **UNIVERSAL SCREENING BY A1C :**
- **A1C ≥ 6.5 PERCENT (≥ 48 MMOL/MOL) THESE PATIENTS ARE MANAGED SIMILAR TO THOSE WITH PREEXISTING DIABETES MELLITUS**
- **A1C < 6.5 PERCENT (< 48 MMOL/MOL)**

PATIENTS AT INCREASED RISK OF TYPE 2 DIABETES BASED ON

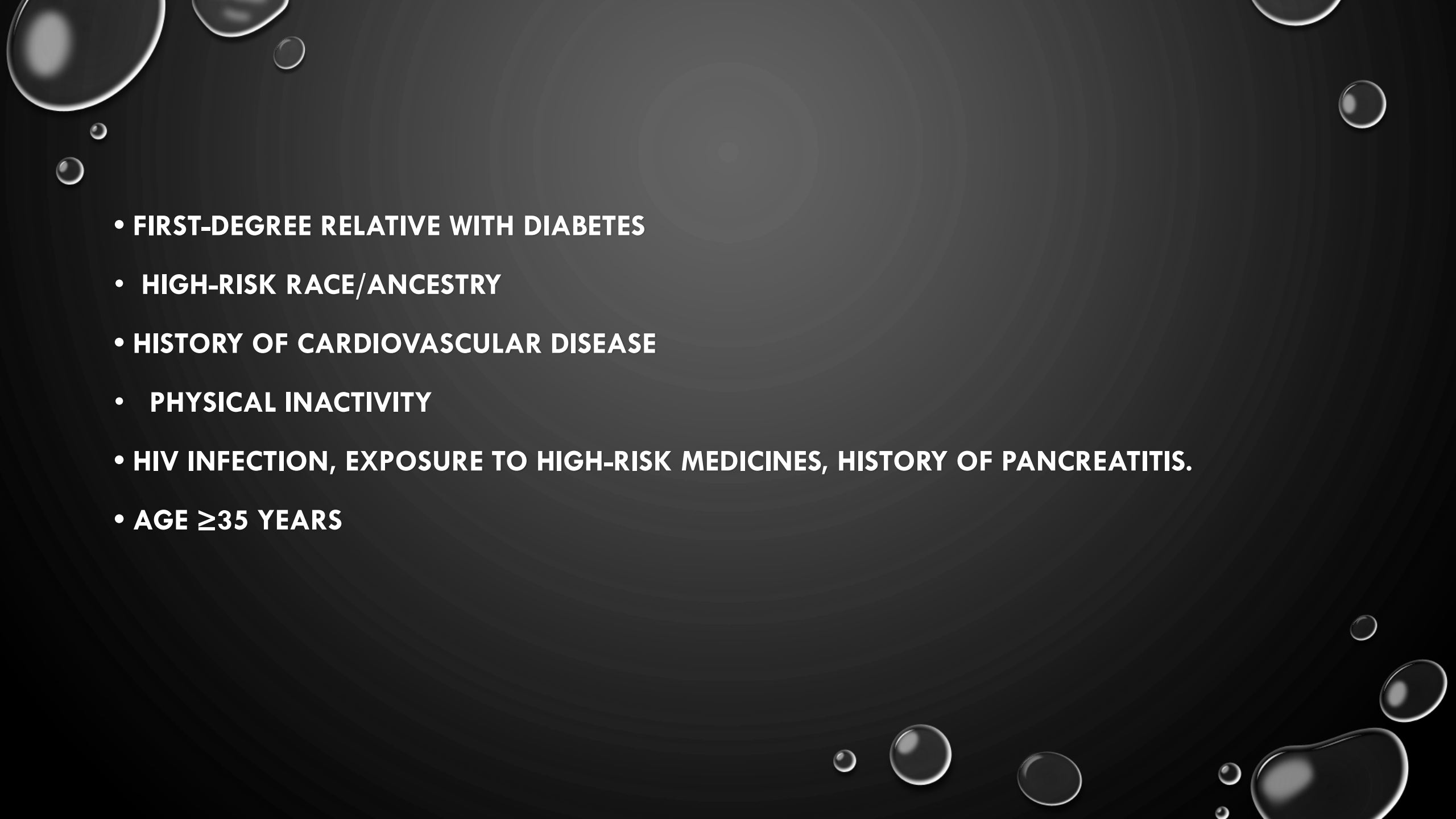
- GDM IN PREVIOUS PREGNANCY

- BODY MASS INDEX (BMI) ≥ 25 KG/M (≥ 23 KG/M IN ASIAN AMERICANS) **PLUS ONE OR MORE OF THE FOLLOWING:**

HYPERTENSION (DEFINED AS $\geq 140/90$ MMHG) OR ON THERAPY FOR HYPERTENSION

CHOLESTEROL LEVEL < 35 MG/DL (0.90 MMOL/L) AND/OR A TRIGLYCERIDE LEVEL > 250

POLYCYSTIC OVARY SYNDROME (PCOS)

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- The background is a dark gray gradient with several realistic water droplets of various sizes. Some droplets are in the top left corner, some in the top right, and a cluster of larger droplets is in the bottom right corner. The droplets have highlights and shadows, giving them a three-dimensional appearance.
- **FIRST-DEGREE RELATIVE WITH DIABETES**
 - **HIGH-RISK RACE/ANCESTRY**
 - **HISTORY OF CARDIOVASCULAR DISEASE**
 - **PHYSICAL INACTIVITY**
 - **HIV INFECTION, EXPOSURE TO HIGH-RISK MEDICINES, HISTORY OF PANCREATITIS.**
 - **AGE ≥ 35 YEARS**

MANAGEMENT OF PATIENTS AFTER AN EARLY PREGNANCY GTT

- **ABNORMAL GTT**
- **NORMAL GTT – PATIENTS WITH NORMAL 75- OR 100-GRAM ORAL GTT IN EARLY PREGNANCY ARE SCREENED FOR GDM AT 24 TO 28 WEEKS OF GESTATION**

MANAGEMENT

- MANAGEMENT IDEALLY BEGINS BEFORE CONCEPTION, WITH THE GOAL OF OPTIMAL GLUCOSE CONTROL BEFORE AND DURING PREGNANCY.
- 400 MG OF FOLIC ACID
- EXCELLENT GLUCOSE CONTROL IS ACHIEVED USING A CAREFUL COMBINATION OF DIET, EXERCISE, AND INSULIN THERAPY.
- PATIENTS MAY NEED TO BE SEEN EVERY 1 TO 2 WEEKS DURING THE FIRST TWO TRIMESTERS AND WEEKLY AFTER 28 TO 30 WEEKS OF GESTATION.

GESTATIONAL DIABETES

- PREVALENCE OF 7%

- **RISK FACTORS FOR GDM:**

AGE, ETHNICITY, PAST OBSTETRIC HISTORY (GESTATIONAL DIABETES IN A PREVIOUS PREGNANCY, A HISTORY OF AN INFANT WEIGHING MORE THAN 4,000 G AT BIRTH, REPEATED SPONTANEOUS ABORTIONS, OR A HISTORY OF UNEXPLAINED STILLBIRTH), A STRONG FAMILY HISTORY OF DIABETES, AND OBESITY

LABORATORY SCREENING

- SCREENING FOR GDM AT 24 TO 28 WEEKS:
- ONE-STEP TEST
- TWO-STEP TEST



OPTIONS FOR PATIENTS UNABLE TO TOLERATE HYPEROSMOLAR ORAL GLUCOSE

- **SERVING OVER ICE**
- **ANTIEMETIC PREMEDICATION**
- **INTRAVENOUS GTT**
- **STRUCTURED POSTPRANDIAL GLUCOSE ASSESSMENT**

MANAGEMENT

- **DIET AND GLUCOSE MONITORING**
- GOAL OF MANAGING GDM : FASTING GLUCOSE LEVELS LESS THAN 95 MG/DL, 1-HOUR POSTPRANDIAL LEVELS LESS THAN 140 MG/DL, OR 2-HOUR POSTPRANDIAL VALUES LESS THAN 120 MG/DL.
- 30 KCAL/KG/DAY OF IDEAL BODY WEIGHT
- CHART OF FBS AND 2HPP

MEDICAL THERAPY

- FOR PATIENTS WITH GDM WHOSE GLUCOSE LEVELS CANNOT BE CONTROLLED WITH DIET, EXOGENOUS INSULIN IS NEEDED

INFECTION

- THE RISK OF **URINARY TRACT** INFECTION AND **PYELONEPHRITIS** IS APPROXIMATELY DOUBLE THAT OF NONDIABETIC PREGNANT PATIENTS.

LABOR AND DELIVERY OF THE PATIENT WITH DIABETES

- IN THE WELL-CONTROLLED PATIENT WITH DIABETES WHO HAS NO COMPLICATIONS ,INDUCTION AT TERM (39 WEEKS) IS OFTEN UNDERTAKEN.
- AN ESTIMATED FETAL WEIGHT OF **4,500 G OR MORE**, CESAREAN DELIVERY MAY BE CONSIDERED
- ONCE ACTIVE LABOR BEGINS OR GLUCOSE LEVELS DECREASE TO 70 MG/DL, A CONSTANT GLUCOSE INFUSION OF A 5% DEXTROSE SOLUTION DELIVERED AT A RATE OF 100 TO 150 ML/HOUR IS ADMINISTERED TO MAINTAIN A GLUCOSE LEVEL OF 100 MG/DL.

- MORE THAN 95% OF MOTHERS WITH GESTATIONAL DIABETES RETURN TO A COMPLETELY NORMAL GLUCOSE STATUS IMMEDIATELY POSTPARTUM; HOWEVER, UP TO 70% OF THESE WOMEN GO ON TO DEVELOP TYPE 2 DIABETES LATER IN LIFE AND NEED TO BE EDUCATED ABOUT THE IMPORTANCE OF MAINTAINING A **HEALTHY DIET AND REGULAR EXERCISE** PROGRAM

POSTDELIVERY FOLLOW-UP

- GLUCOSE TOLERANCE SCREENING IS ADVOCATED **4 TO 12 WEEKS POSTPARTUM AND PERIODICALLY (AT LEAST EVERY THREE YEARS)** TO DETECT THE 3% TO 5% WHO REMAIN DIABETIC AND REQUIRE TREATMENT
- SCREENING INVOLVES A **75-G** GLUCOSE LOAD, FOLLOWED BY PLASMA GLUCOSE DETERMINATION 2 HOURS LATER

THANK YOU