

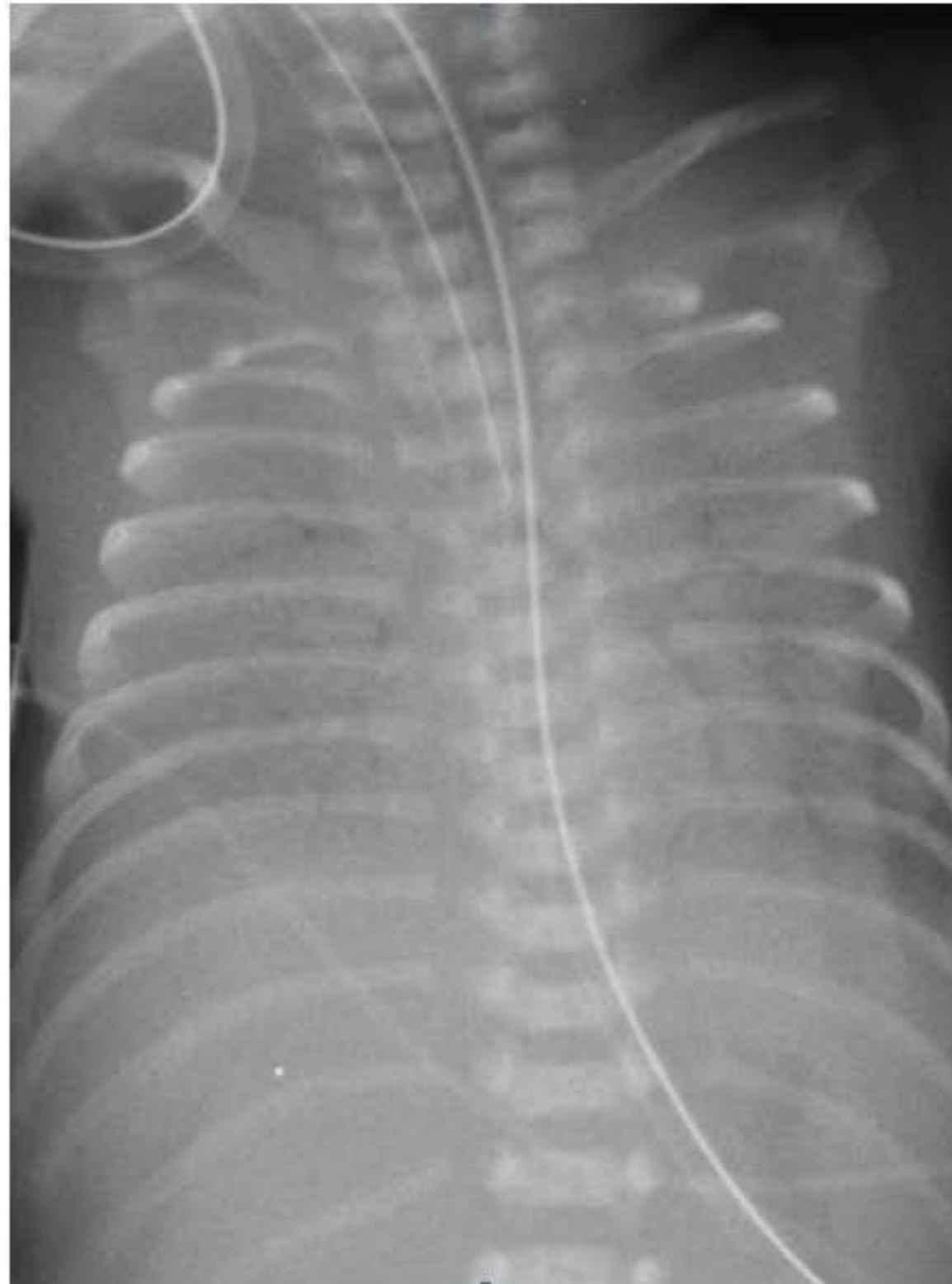
A newborn boy is in the delivery room with respiratory distress. He was born vaginally at 28-weeks gestation due to maternal pre-eclampsia. Examination shows a cyanotic tachypneic boy with intercostal and subcostal retractions and nasal flaring. On lung auscultation, coarse breath sounds are heard bilaterally. Respiratory support with continuous positive airway pressure is provided. The patient is admitted to the neonatal intensive care unit where he is intubated due to worsening respiratory status. An orogastric tube is placed to decompress the stomach. A **chest radiograph** is obtained. In addition to prematurity, which of the following is a risk factor for the development of respiratory distress syndrome?

- ☐ A. Antenatal corticosteroids
- ☐ B. Intrauterine growth restriction
- ☐ C. Maternal diabetes mellitus
- ☐ D. Maternal hypertension
- ☐ E. Prolonged rupture of membranes
- ☐ F. Vaginal delivery

Media Exhibit



of 1



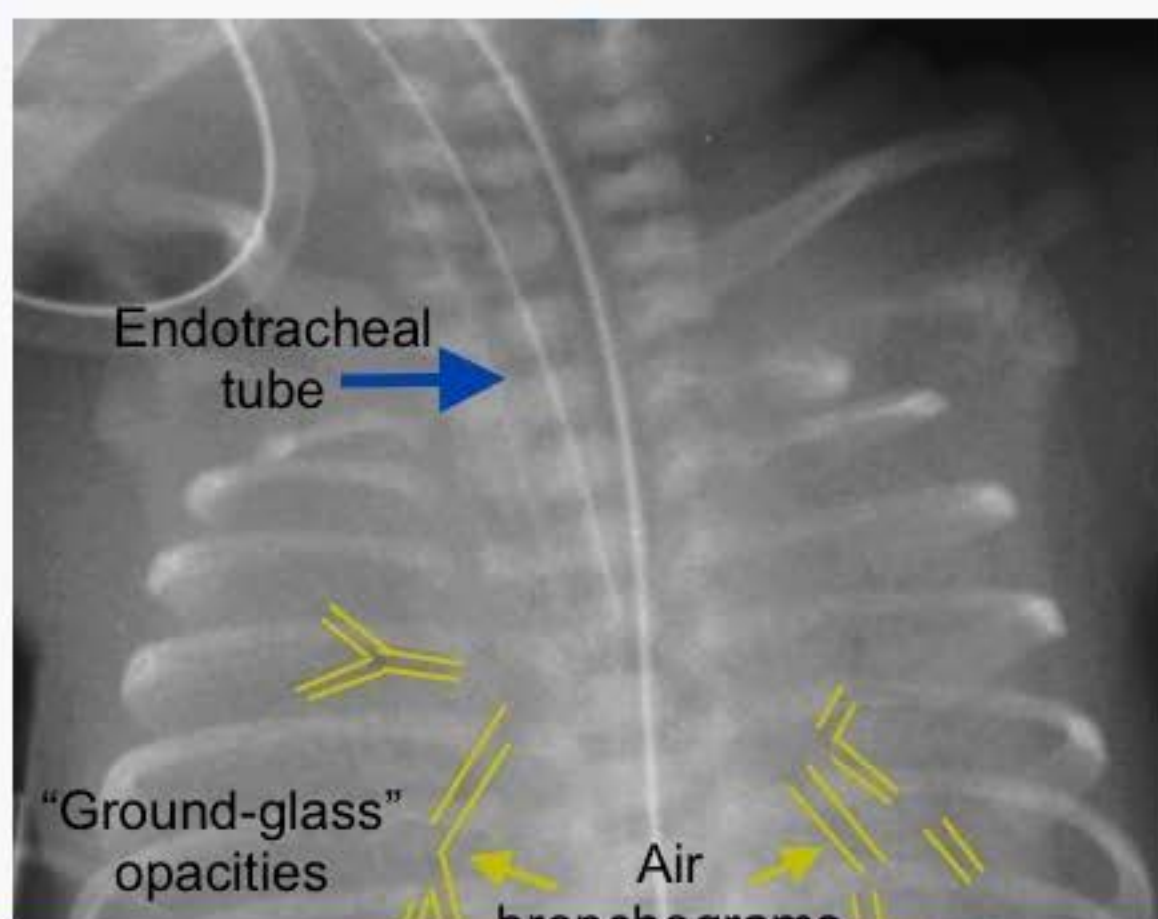
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- ☐ A. Antenatal corticosteroids [1%]
- ☐ B. Intrauterine growth restriction [33%]
- ☒ C. Maternal diabetes mellitus [41%]
- ☐ D. Maternal hypertension [10%]
- ☐ E. Prolonged rupture of membranes [14%]
- ☐ F. Vaginal delivery [0%]

Proceed to Next Item

Explanation:

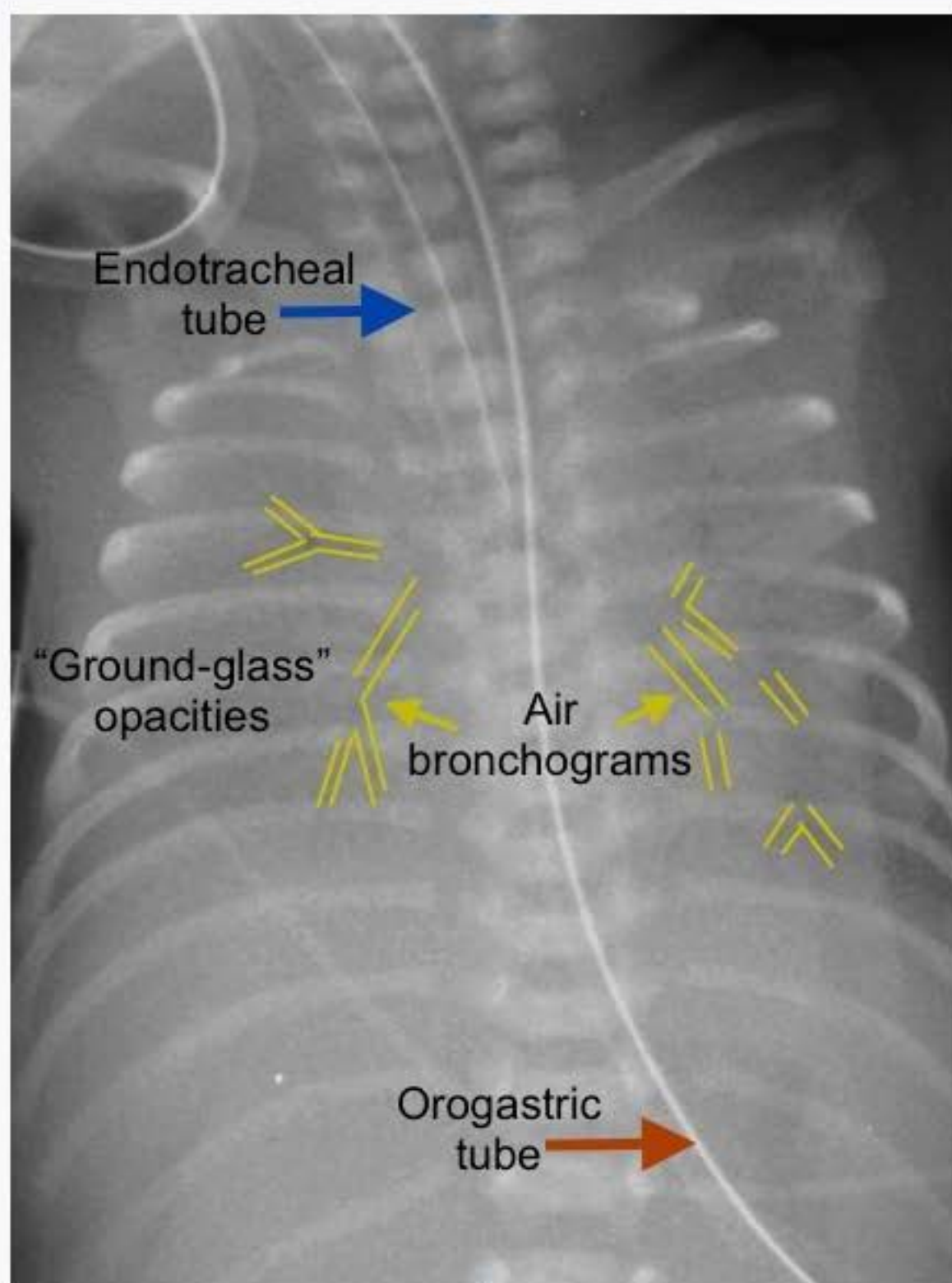
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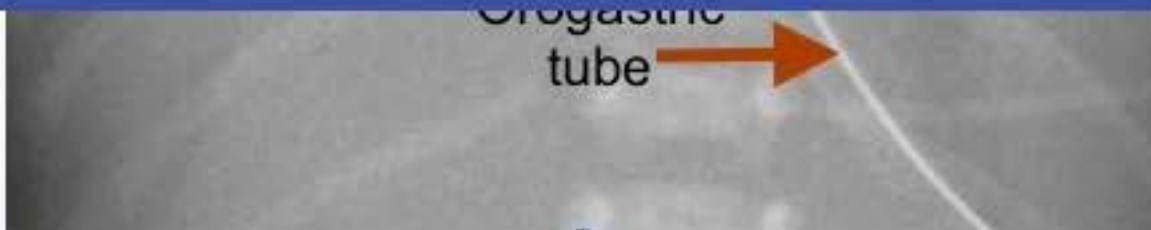
Proceed to Next Item

Explanation:

User Id: [REDACTED]



This patient most likely has respiratory distress syndrome (RDS), a pulmonary condition caused by immature lungs and surfactant deficiency. RDS incidence is inversely proportional to gestational age. The most important risk factor for RDS is **prematurity**; other factors that increase RDS risk include male sex, perinatal asphyxia, **maternal diabetes**, and cesarean section without labor. Maternal diabetes increases the incidence of RDS by delaying the maturation of pulmonary surfactant production. Maternal hyperglycemia causes fetal hyperglycemia, which in turn triggers fetal hyperinsulinism. High levels of circulating insulin antagonize cortisol and block the maturation of sphingomyelin, a vital component of surfactant.



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RDS presents with tachypnea, retractions, grunting, nasal flaring, and cyanosis at birth. Despite initial resuscitation and respiratory support, patients can continue to decompensate and require intubation. Chest radiograph shows a **diffuse reticulogranular pattern** ("ground-glass opacities") and **air bronchograms** (Image). Treatment consists of antenatal prevention with **corticosteroids** and postnatal treatment with exogenous **surfactant** and respiratory support.

(Choice A) Antenatal corticosteroids are given to women in preterm labor to enhance fetal lung maturity prior to delivery, resulting in decreased incidence of RDS.

Intrauterine growth restriction (**Choice B**), maternal hypertension (**Choice D**), and chronic intrauterine stress from prolonged rupture of membranes (**Choice E**) decrease the risk of RDS. Intrauterine stress is thought to stimulate early fetal lung maturity.

(Choice F) Cesarean delivery without labor is associated with increased risk of RDS. However, this baby was born vaginally and had the benefit of stress from labor.

Educational objective:

Respiratory distress syndrome is caused by surfactant deficiency. Important risk factors include prematurity and maternal diabetes mellitus.

References:

1. [Preconception care for diabetic women for improving maternal and infant health.](#)
2. [Care of the infant of the diabetic mother.](#)