



Effect of Diabetes Mellitus and Rheumatologic disease on the Fetal Heart

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- *The incidence of congenital heart disease (CHD) is **fivefold** higher in infants of pregestational diabetic mothers than in controls. Ventricular septal defect (VSD), single-ventricle defects, heterotaxy, truncus arteriosus and transposition of the great arteries are more common defects.*
- *Poor control of blood sugar in the first trimester of gestation, as evidenced by an elevated glycohemoglobin level (**HbA1c**) is the most definitive risk factor for CHD of fetus in diabetic mother.*



- *Gestational diabetes, which is diagnosed beyond the first trimester of pregnancy, does not increase the risk of CHD in the fetus.*
- *If the **HbA1c** was greater than **6%** in the second trimester, fetal echocardiography in the third trimester to assess for ventricular hypertrophy is recommended for pregestational and gestational diabetic pregnancies.*



- *Isolated Congenital complete AV block (AVB) in more than 90% of affected neonates results from passage of maternal anti-Ro/SSA and/or anti-La/SSB antibodies.*
- *The mothers of these neonates are commonly diagnosed with systemic lupus erythematosus (SLE), Sjögren syndrome (SS), or other rheumatic diseases, although many are asymptomatic.*



- *1% - 5% of fetuses of serology positive mothers develop AVB .*
- *If a previous child had AVB or neonatal lupus, the risk increases to 11% - 19%.*
- *The presence of maternal **hypothyroidism** or **vitamin D deficiency** further increases the risk.*



- *Serial fetal echocardiographic screening is recommended in expectant mothers with known +SSA/SSB autoantibodies beginning at 16 weeks, then weekly or every other week to 28 weeks in a first child. For mothers with a prior child with AVB or neonatal lupus, screening at least weekly from 16 to 28 weeks is recommended.*



- In addition to screening for AVB, serial fetal echocardiograms should include observation for tachyarrhythmia, including atrial flutter (AFL), VT, or junctional ectopic tachycardia, all of which have been reported in fetuses with isoimmunization. Mitral or tricuspid valvitis, pericarditis, myocardial dysfunction, or endocardial fibroelastosis (EFE) may coexist. Concern for myocardial involvement may justify additional fetal echocardiographic assessment in the third trimester even if the rhythm has remained sinus throughout gestation*



- *Untreated, fetal mortality ranges from **9% to 34%**, with risk of death increased in those diagnosed before 20 weeks, or with a ventricular rate <50 bpm, fetal hydrops, or impaired left ventricular function at diagnosis*
- *Treatment with **Dexamethasone** (4 to 8 mg/day) may be considered for the fetus with second-degree AV block or first-degree block with other evidence of cardiac involvement as reversal or stabilization of incomplete block and improvement in hydrops, ventricular function, and EFE has been reported. Treatment may also be considered in fetuses manifesting with complete block to prevent dilated cardiomyopathy. potential for significant side effects such as growth restriction, ductal constriction, maternal diabetes, oligohydramnios, and possible CNS side effects*
- ***IVIg** may also be considered to potentially improve survival*

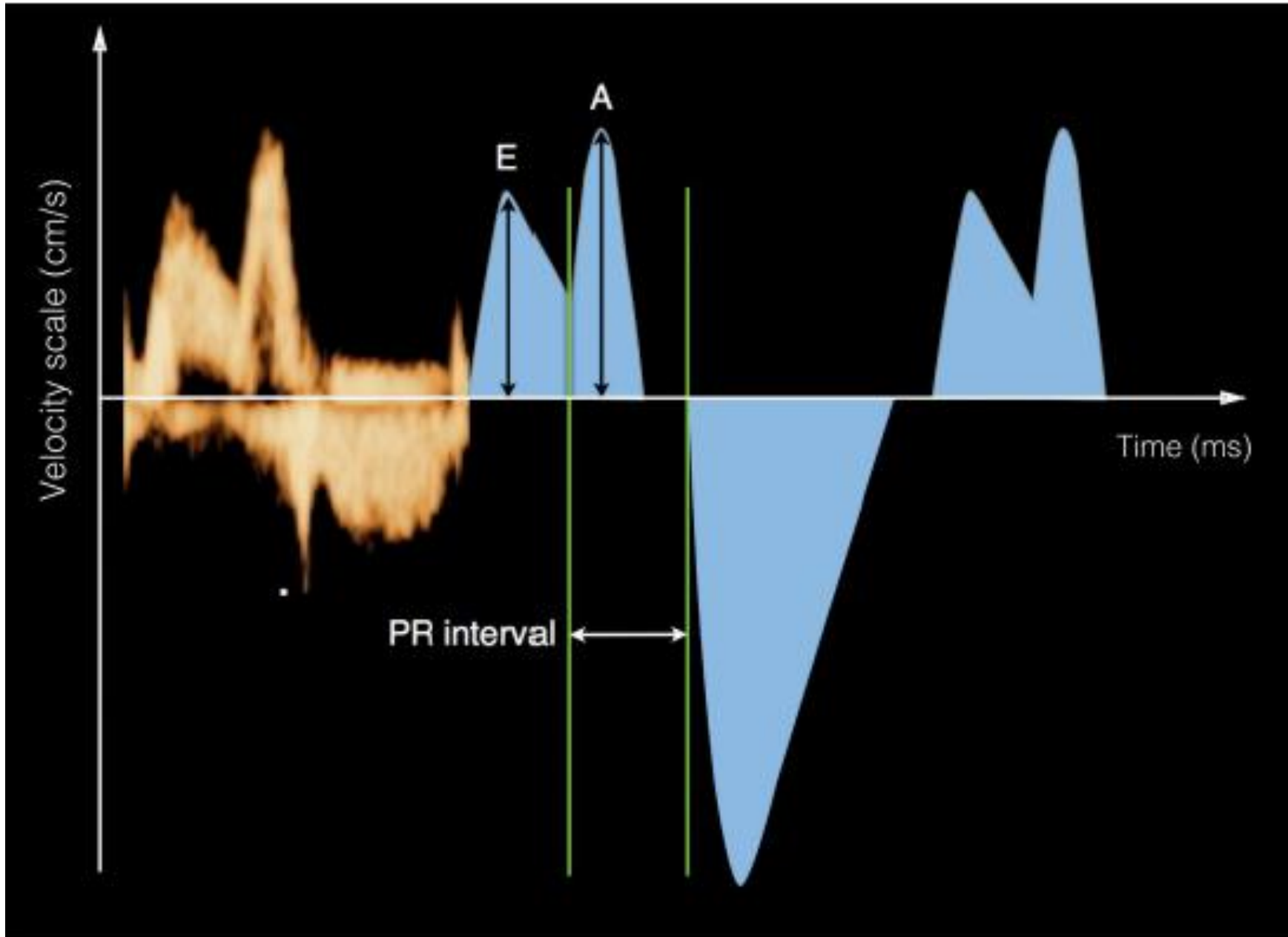


PITCH prophylactic IVIG therapy for
congenital heart block

- *12 weeks to 22weeks IVIG every 3weeks for
mother with previous congenital block*



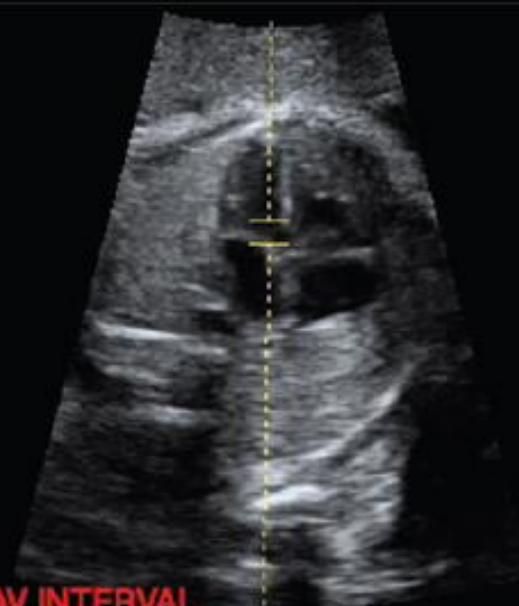
- *Complete fetal AVB usually develops during gestational weeks **16 to 24**.*
- *Complete AVB conveys a significant fetal mortality rate (**15% to 30%**) and morbidity; two thirds of affected offspring will require permanent pacing.*
- *Early diagnosis and treatment of low grade blocks can normalize AV node function.*





Pwr 100 %
Gn 0
WMF 230 Hz
SV Angle 0
Size 4.0mm
Frq mid
PRF 7.0kHz

F1 T 0.12s
2 T 0.12s
Pwr 100 %
Gn 1
C8 / M7
P2 / E1
SRI II 3



AV INTERVAL

