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Congenital heart disease and maternal diabetes

Some 0.6–0.8% of liveborn babies have congenital cardiovascular malformations. For babies whose mothers have diabetes retrospective studies have put the rate at around 2–4%. A prospective population based study in the north of England has provided more data (Christopher Wren et al. Heart 2003;89:1217–20).

The population studied has a recent live birth rate of around 32 000 a year. In the study years, 1995–2000, there were 192 618 live births, 609 to mothers with pre-existing diabetes. Cardiovascular malformations were diagnosed before the age of 12 months in 1417 babies of non-diabetic mothers and 21.6% (14.4%, 3.2% and 4.0%) in infants of diabetic mothers. It is estimated that these three malformations are at least 15 times more prevalent in liveborn infants of mothers with diabetes. Data from the Northern Congenital Abnormality study show that at least 2.8% of babies born with transposition between 1985 and 2000 had mothers with diabetes. This contrasts with the 0.32% prevalence of diabetes among all mothers in the prospective 1995–2000 study. Among the 609 women with diabetes in this study a cardiovascular malformation was diagnosed antenataly in 12 and postnatally in 12. Two affected fetuses, both with left atrial isomerism, died in utero. During the study period 92 non-diabetic pregnancies with a fetus with cardiovascular malformation were terminated.

Mothers with pre-existing diabetes have a fivefold increase in the risk of having a baby born alive with a cardiovascular malformation. Transposition of the great arteries, truncus arteriosus, and tricuspid atresia are the malformations particularly associated with maternal diabetes.
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