ABC News

Scientists link low birth weight and diabetes

By Ashley Hall and wires

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British researchers have found two genetic variants that affect a baby's size at birth and say one of them is also linked with developing diabetes in later life.

The finding, published in the journal Nature Genetics, is the first firm evidence of a genetic link between low birth weight and diabetes and helps explain why small babies have higher rates of diabetes when they grow up.

Professor Mark McCarthy, who leads the diabetes research group at the University of Oxford, says severe malnutrition and low birth weight has a big impact on infant survival.

"It's become clear in the last 10 to 20 years that there's a rather strange connection between birth weight and subsequent risk of diabetes and heart disease, for example," he said.

"So that babies that are born smaller, in general, have higher rates of those diseases later in life."

New evidence of a genetic link between low birth weight and diabetes. (ABC News)

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It has already been established that all manner of environmental factors can influence the birth weight of a baby.

Factors include birth order, whether the mother smokes or drinks, and how many weeks into the pregnancy the baby is delivered.

But Professor McCarthy says the new study suggests the baby's genes may play a part as well.

"We actually found some strong genetic effects and were able to identify two specific genetic regions that were quite strongly associated with birth weight," he said.

"I think these are all factors that go into the mix. These are not genetic effects that will say irrespective of everything else that you will end up with a small baby.

"[They say that] on average you tend to produce a baby that's at least a little bit smaller than a baby that doesn't have these genetic factors."

Professor McCarthy say the genetic variants are quite common.

"[Among] European populations we think that about 10 per cent of the population have at least all four birth weight lowering variants," he said.

"These particular variants together explain about a difference of about 100 grams, so about four ounces.

"So on their own they're clearly not explaining why some children are massively larger than others.

"But that equates, for example, the effects on birth weight of a mother smoking about five cigarettes a day in the third trimester of pregnancy, so it's on a par with some of the environmental exposures that we know. They influence both ways."

Professor McCarthy says it is likely there will be more than two genetic variants at play in determining birth weight.

And he says that once they are all identified, the finding may lead to new discoveries about how to treat diabetes.

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