

# RESEARCH

Obstetric cholestasis research at Imperial College. Catherine Williamson, Senior Lecturer (Honorary Consultant) in Obstetric Medicine.

## Background

Obstetric cholestasis (OC) is a liver disease of pregnancy that affects 1 in 200 women in the UK. Affected women develop itch and liver impairment in pregnancy, and they have an increased risk of stillbirth and prematurity. The precise cause of the condition has not been established for the majority of cases, although it is known that hereditary factors are important. Women who are predisposed to develop OC have abnormal sensitivity to the high levels of female reproductive hormones that occur in pregnancy, and this causes them to have high levels of bile acids in the blood. We believe that the high bile acids in the mother's blood cross the placenta and enter the unborn baby's circulation.

The Lauren Page Trust has funded two projects at Imperial College. Both studied different aspects of OC. One focussed on the placenta. We believe that some fetuses have hereditary abnormalities in the placenta that result in bile acids accumulating in the blood of the unborn baby. The money provided by the Lauren Page Trust allowed a scientist (Poorvi Patel) to complete two important pieces of work. She showed that the levels of two genes that influence bile acid transport are reduced in placentas from OC pregnancies. She presented these results at two international meetings (The Society for Gynaecological Investigation in Los Angeles and the British Maternal and Fetal Medicine Society in Glasgow), and the Lauren Page Trust was acknowledged as a sponsor of the work at both meetings. This work was well received and Poorvi submitted a manuscript to the journal *Placenta* for publication. The Lauren Page Trust is acknowledged as a sponsor in this publication. She was asked to do some additional experiments before this work was considered for publication and she has recently completed this work. The Lauren Page Trust will of course be acknowledged in this new manuscript.

Poorvi also successfully developed an experimental system that measures the transport of bile acids from the fetus into the placenta, and another that measures the transport of bile acids from the placenta to the mother. She is currently designing experiments using specific drugs that are used to treat OC (UDCA and dexamethasone) to establish

whether they improve bile acid transport from the fetus to the mother. The funds from the Lauren Page Trust allowed Poorvi to obtain more funds (approximately £20,000) to study this experimental system further and this work is ongoing.

The second grant that the Lauren Page Trust gave to our group allowed another scientist (Pete Dixon) to obtain preliminary results for a grant application. Pete is studying genetic factors that influence whether women with OC respond to specific drug treatments. The pilot data that were generated when he was funded by the Lauren Page Trust helped us to prepare the grant application to Wellbeing of Women. This was successful and our group has now been awarded £100,000 to allow Pete to spend another 2 years studying the ways that we can predict which women with OC will respond to specific treatments. We hope that this important project will allow us to accurately target drug treatments for women with OC, and therefore will help us reduce OC-related stillbirth and premature delivery.

The other important consequence of the sponsorship that we have received is that OC has been publicised amongst health professionals. This is important because approximately 20% of pregnant women itch. Most of these women are not at risk of stillbirth but it is essential that doctors and midwives perform the blood tests to identify the women who have OC and who may have stillbirths or premature babies.

I regularly give research talks in the UK and overseas, and The Lauren Page Trust is always acknowledged as a sponsor of our OC research.

