

Correspondence

Maternal IgE is transferred to fetuses with IgG and minimally sensitizes fetal/neonatal skin mast cells

To the Editor:

We read with great interest the editorial about neonatal mast cells (MCs) and transplacental IgE transfer written by Dwyer and Boyce.¹ On the basis of an article published in *Science* by Msallam et al,² they demonstrated that maternal IgE passes through the placenta via neonatal Fc receptors (FcRns) and then binds mature mast cells (MCs) in the skin. Although we are pleased to know how important this topic is, we would like to express inquiries regarding some of the article's conclusions.

First, we need to be cautious about the conclusion that monomeric maternal IgE can transfer to fetuses directly via FcRns, because IgE cannot bind to FcRn, whereas IgG can. Most IgE found in human cord blood was in the form of immune complexes with anti-IgE IgG antibodies.³ Msallam et al also showed the presence of IgE-IgG immune complexes in the blood of dams and the colocalization of IgG and IgE on the placenta.² Consistently, we have previously demonstrated that maternal IgE was detected in fetal sera when dams were intravenously injected with IgE with anti-IgE IgG antibodies.⁴ These data suggest that although maternal IgE can be transferred to fetuses, its transfer is dependent on anti-IgE IgG antibodies because only IgG can bind to FcRn (Fig 1).

Second, we are afraid that most fetal and neonatal skin MCs are not sensitized with maternal IgE. We have demonstrated that most

fetal and neonatal skin MCs do not express high-affinity IgE receptors (FcεRI), and their expression is increased in an age-dependent manner.⁴ Msallam et al also demonstrated that no more than 10% of fetal and neonatal skin MCs are positive for IgE whereas 80% of adult skin MCs are positive for IgE. The expression of FcεRI on fetal and neonatal MCs was significantly lower than on adult MCs in murine and human skin.² Collectively, these results demonstrate that fetal and neonatal skin MCs can be minimally sensitized with maternal IgE (Fig 1).

Therefore, we would like to propose that maternal IgE can be transferred to fetuses not in a monomeric state but in the form of immune complexes with anti-IgE IgG antibodies. Although only a small fraction of fetal and neonatal skin MCs can bind to maternal IgE, we are not sure about whether maternal IgE can contribute to type I hypersensitivity *in vivo*. Clinically, type I hypersensitivity rarely happens to human infants younger than 6 months. We believe that more studies will be needed to elucidate functions of maternal IgE in fetuses and neonates.

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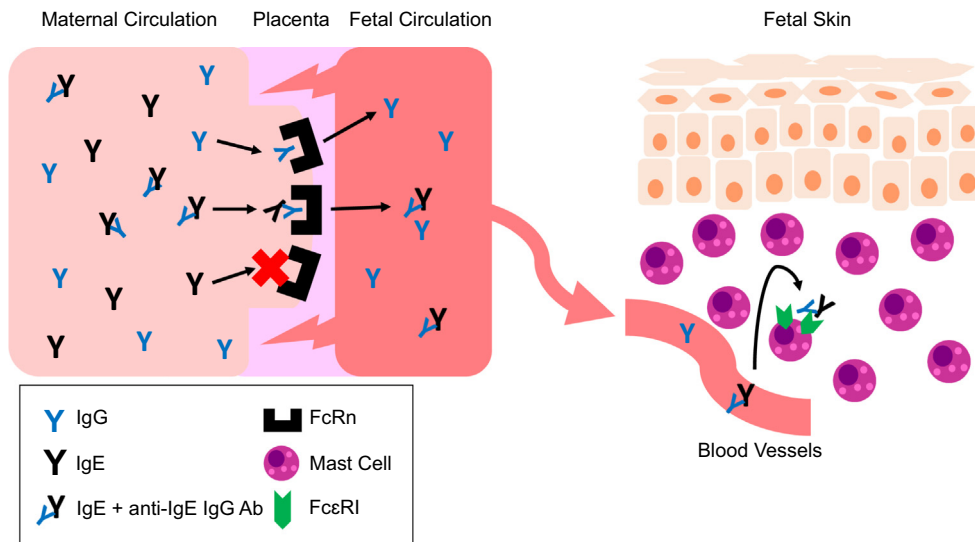


FIG 1. Maternal IgE can be transferred to fetuses in the form of immune complexes with anti-IgE IgG antibodies (Abs). Most skin MCs are not sensitized with maternal IgE because of low expression of FcεRI in fetuses.

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