The Maternal Immune System During Pregnancy

LI Kwok To Thomas*

Department of Obstetrics and Gynecology, Queen Mary Hospital, Pokfulam, Hong Kong.

Accepted on October 14, 2021

Commentary

Preparing for the arrival of a toddler is an exciting time for potential mothers, but there's tons to think about . apart from painting the nursery and learning the way to change a diaper, pregnant women and their partners got to make decisions on how they need to bring their child into the planet . Whether by natural, drug-assisted or surgical means, there are associated risks and benefits across the board, counting on the circumstances [1]. Every pregnant woman must know that birth is meant to happen simply and simply which six key birth practices make birth safer for mothers and babies [2].

The Standards for Maternal and Neonatal Care consists of a set of user-friendly leaflets that present World Health Organization (WHO) key recommendations on the delivery of maternal and neonatal care in health facilities, ranging from the primary level of care. Facilities at higher levels of care should even have these standards in situ as a minimum (essential) care for all mothers and babies the aim of the Standards for Maternal and Neonatal Care is to help programme managers and health care providers to:develop evidence-based national and sub-national standards on maternal and neonatal health care;introduce standards setting and a top quality improvement process at facility level as a way to enhance access and quality of maternal and neonatal health services;provide effective maternal and neonatal health services;use existing resources to realize the optimal health care outcomes; andimprove individuals', families' and community's satisfaction and utilization of maternal and neonatal health services [3].

During pregnancy, a woman’s system undergoes various changes because it balances protection against pathogens with tolerance of fetal antigens. But the timing of particular changes, and the way they regulate the onset of labor, have thus far been difficult to define. Now, employing a combination of mass cytometry and computational modeling, researchers at Stanford University have described a “clock” for the immunological events leading up to birth. All women and babies need good maternity care during pregnancy, child birth and after delivery to reinforce optimal pregnancy outcomes.

Immune function is altered during pregnancy to guard the fetus from an immunological attack without disrupting protection against infection. Now, Aghaeepour et al. use mass cytometry to look at the precise timing of those pregnancy-induced changes in immune function and regulation. They developed an algorithm that captures the immunological timeline during pregnancy that both validates previous findings and sheds new light on immune cell interaction during gestation. By defining this immunological chronology during normal term pregnancy, they will now begin to work out which alterations accompany pregnancy-related pathologies [4].

Clinical manifestations of an altered system in pregnancyThe notion of pregnancy as an altered state of immune suppression is well documented.132–136 Pregnancy may be a period of time that poses a risk of increased susceptibility to infec-tious diseases, and the maternal immune system is solely responsible for defending against infectious microorgan-isms and protecting the fetus because both the fetal and thus the placental responses are limited.132,136 The Th1/Th2 immune shifts in pregnancy are well established and have provided a platform to further study the immune system.136 This has led to refining our understanding about the system and the development of a new paradigm regard-ing pregnancy and immune function. This newer theory proposes that the immune system during pregnancy is a functional and active system, wherein not only a maternal immune reaction exists but also a fetal–placental immune reaction , which in combination is powerful in defending both the mother and the fetus.133,136 With this notion, the system isn't suppressed, but rather during a modulated state, and therefore, this explains why pregnant women have differential responses to varied pathogens.133 During this altered response, signals are generated within the placenta, which modulate the maternal system to behave uniquely to different microorganisms.133 Although these old and new paradigms surrounding the immunology of pregnancy dif-fer, it's clear that the immune system’s goal in pregnancy is to make sure that a pregnancy progresses successfully, while still providing protection for both mother and fetus from external pathogens [5].

References

1. Morelli SS, Mandal M, Goldsmith LT et al. The maternal immune system during pregnancy and its influence on fetal development. Res Rep Biol. 2015;6:171-89.
2. Oliveira LJ, Barreto RS, Perecin Fet al. Modulation of maternal immune system during pregnancy in the cow. Reprod Domest Anim. 2012;47:384-93.
3. Bauman MD, Iosif AM, Smith SE et al. Activation of the maternal immune system during pregnancy alters behavioral development of rhesus monkey offspring. Biol Psychiatry. 2014;75(4):332-41.
4. Racicot K, Kwon JY, Aldo Pet al. Understanding the complexity of the immune system during pregnancy. Am J Reprod Immunol. 2014;72(2):107-16.
5. Prins JR, Hylkema MN, Erwich JJ et al. Smoking during pregnancy influences the maternal immune response in mice and humans. Am J Obstet Gynecol. 2012;207(1): 76-81.

***Correspondence to**

LI Kwok To Thomas

Department of Obstetrics and Gynecology

Queen Mary Hospital

Pokfulam, Hong Kong

E-mail: thomali@gmail.com