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B lymphopoiesis in pregnant women

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Introduction

B cell development and haematopoiesis are very complex processes. During pregnancy, changes in the haematopoietic system are dramatic with huge demand on erythropoiesis. In mice, it is known that B cell production is temporary interrupted during pregnancy due to a decrease in IL-7 availability [1]. Reduction in IL-7 production is controlled by sex progesterone. We decided to investigate the B cell profile of peripheral blood during human pregnancy in order to see if B lymphopoiesis was similarly affected.

Aim of the study

To determine if there is a reduction in B lymphopoiesis in pregnant women and to look for different B cell subpopulations. Blood was collected in all three trimesters.

Methods

EDTA Peripheral Blood

↓

CD27 PE Cy5 + CD19 PE Cy7 + CD38 APC Cy7 + CD20 eFluor + CD45 Krome Orange

↓

Reagent 1 (Beckman Coulter IntraPerp kit)

↓

Wash

↓

Reagent 2
cyIgG FITC + cyIgA1(α1) PE + cyIgM APC

↓

Wash twice

↓

BD FACS Canto II

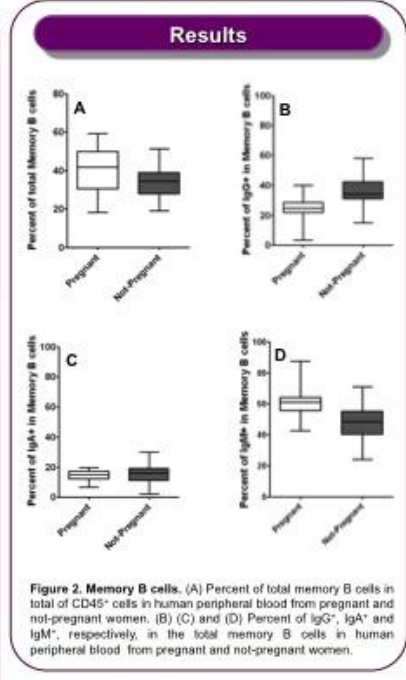
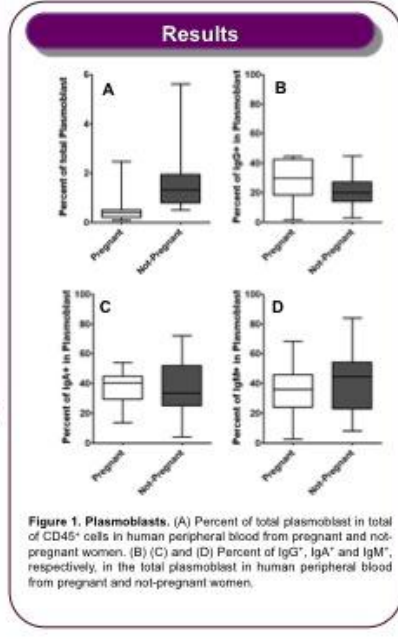
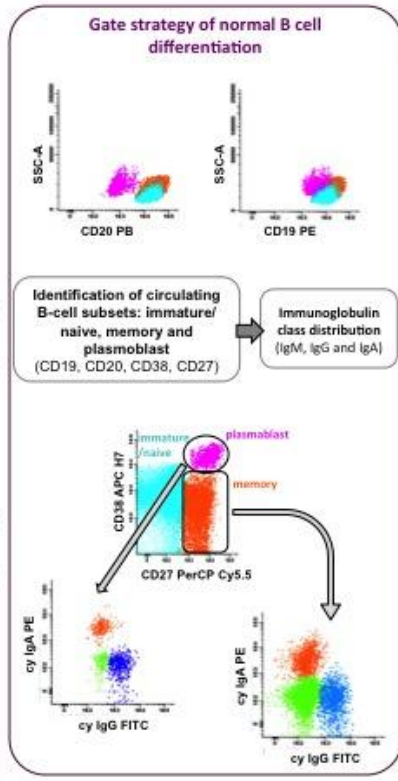
Analysis:

Flow files were analyzed with Infinicyt 1.7.0 software (Cytognos) and the statistic analysis with Excel and GraphPad Prism software .

Acknowledgements

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All the samples were prepared and acquired in IPST, Institute of Blood and Transplantation in Portugal



Future Experiments

Although IL-7 has been shown to play a fundamental role in mouse B lymphopoiesis, its role in human B lymphopoiesis is controversial. We plan to measure serum IL-7 and erythropoietin levels in the serum during pregnancy.

Conclusions

This is the first time that a systematic analysis of B lymphopoiesis has been carried out in human pregnancy. Our preliminary results indicate that unlike mice, B lymphopoiesis is not drastically perturbed during pregnancy.

Comparing samples from pregnant women with non-pregnant controls, our results suggest that the percentage of IgA⁺ and IgG⁺ plasmablast as well as memory IgM⁺ is higher during pregnancy.

However we still need to do further studies to identify, characterize and understand these changes.

References

[1] Nabil Bosco, Rhodri Ceredig and Antonius Rolink; "Transient decrease in interleukin-7 availability arrests B lymphopoiesis during pregnancy"; 2008; European Journal of Immunology; 38: 381-390