

TGF-β1 LEVELS IN RESPONSE TO IRON REPLACEMENT THERAPY. A PRELIMINARY ANALYSIS.

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BACKGROUND

The cytokine transforming Growth Factor-β1 (TGF-β1) is an anti-inflammatory cytokine that play an important role in iron metabolism. However, the effect of iron therapy on TGF-β1 expression during pregnancy is still unknown. Here we assess TGF-β1 levels in response to oral and intravenous iron replacement therapy in pregnant women with iron deficiency anaemia (IDA).

- Pregnant women (n=26) with IDA were prescribed oral iron therapy as per the British Society of Haematology 2012 guidelines.
- Response to treatment was determined by haemoglobin measurement at follow up visits (V1, V2) within 2-4week intervals. Non-responders to oral iron were prescribed IV iron if they failed to respond at V1 and V2.

1) DESIGN

2) MATERIALS AND METHODS

- Serum from each visit and puerperium visit (V5) was analysed for ferritin, hepcidin and TGF-β1 by quantitative-sandwich-ELISA.
- Results were divided into two groups, those who responded (R) to oral iron (n=15) and non-responders (NR) who received intravenous (IV) iron (n=11).

- No statistically significant difference in TGF-β1 or serum ferritin at any of the visits between the groups
- Serum hepcidin values showed a significant difference between V1 (10.5ng/ml) and V5 (18.4ng/ml) as well as V2 (6.3ng/ml) and V5 (18.4ng/ml)(p<0.005) – no significant correlation,
- Statistically significant decrease in TGF-β1 at V1 (63.9ng/ml) compared to V5 (56.1ng/ml) for women receiving IV iron; as well as V2 (63.4ng/ml) compared with V5 (56.1ng/ml) (p<0.05).
- Statistically significant increase in serum ferritin and hepcidin (p<0.001) except for hepcidin levels between V2 and V3, where there was a statistically significant decrease (p<0.05). No significant correlation between TGF-β1 versus both serum ferritin and hepcidin.

3) RESULTS

CONCLUSION

The functions of TGF-β1 during pregnancy includes fetoplacental angiogenesis, embryo implantation and immunosuppression. Our data demonstrated that IV iron treatment decreases serum levels of TGF-β1 but oral iron doesn’t. However, decreasing levels of TGF-β1 with increased gestation age have previously been reported, in both normal and abnormal pregnancies. Further studies are ongoing on a larger sample size and a wider array of pro-inflammatory and anti-inflammatory cytokines to determine whether aberrant inflammation can explain response to iron therapy.

References Yang, D. *et al.* (2021) ‘Role of transforming growth factor-β1 in regulating fetal-maternal immune tolerance in normal and pathological pregnancy’, *Frontiers in Immunology*,12

Acknowledgements

We would like to thank everyone who has supported this study at Research Institute in Healthcare Science, University of Wolverhampton and the Oxford team
No conflict of interest to declare