

Changes in soluble biomarker levels in monochorionic-diamniotic twins with TTTS

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Objective

To determine maternal plasma level changes of some soluble biomarkers in monochorionic diamniotic (MCDA) twins with twin-to-twin transfusion syndrome (TTTS), compared to uncomplicated MCDA twins.

Methods

A longitudinal cohort study was carried out in over 300 pregnant women with MCDA twins to find out women with TTTS. The soluble levels of VEGF-R1, VEGF-R2, IL-6, and TNF- α determined by enzyme-linked immunosorbent assay (ELISA) were obtained at the first trimester (12 weeks). 30 TTTS pregnant women staged II-IV according to Quintero classification from 16 to 26 weeks undergoing fetoscopic laser surgery (FLS group) were measured these biomarkers before and 48 hours after surgery and 30 uncomplicated MCDA twins with respectively gestational age were tested (uncomplicated group). The levels of the markers were compared between FLS group and uncomplicated group, between the first and second trimesters, and between before and after surgery to determine the changes in these biomarker levels.

Results

Our results showed that the VEGFR-1 levels reduced significantly from 1074.25 pg/mL to 812.65 pg/mL ($p=0.005$) before and after fetoscopic laser surgery but were not different between the patients with and without TTTS in the first and second trimesters. However, VEGFR-2, IL-6, and TNF- α concentrations showed no statistically significant differences between the first and second trimester, between the patients with or without TTTS, or between the patients with TTTS before and after surgery.

Conclusion

There were no significant changes in VEGF-R1, VEGF-R2, IL-6, and TNF- α levels between MCDA twins with or without TTTS, but the VEGFR-1 levels reduced significantly after fetoscopic laser surgery. VEGFR-1 may be a potential marker for the prognosis of surgical treatment of TTTS. Other studies with larger data should be performed to assess the prognostic value of these biomarkers.