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Assessment of fetomaternal hemorrhage among rhesus D negative pregnant mothers using Kleihauer-Betke test and flow cytometry in Addis Ababa, Ethiopia

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Background: This study aimed to assess fetomaternal hemorrhage (FMH) among RhD negative pregnant mothers using two techniques, Kleihauer-Betke (KBT) and Flow cytometry (FCM). To determine if patient-specific doses of prophylactic anti-D warrant further investigation in Ethiopia and wider Africa.

Methodology: Hospital based cross-sectional study was conducted among 75 RhD negative pregnant mothers using convenient sampling technique.

Result: FMH has been detected in 52% and 60% by KBT and FCM techniques respectively. The volume of FMH quantified in the majority of the cases (92.5% and 87%) was <10 mL fetal blood while >30mL in 1.3% (1/75) and 2.7% (2/75) as calculated by KBT and FCM respectively. The FMH calculated by the two methods have good correlation; $r=0.828$ ($p=0.000$) for categorized and $r=0.897$ ($p=0.000$) for continuous values and the agreement between the FCM and KBT was moderate with kappa (κ) value of 0.53 ($p=0.000$).

Conclusion: Most of FMH calculated (<10 mL) could have been neutralized by lower doses which might have lower costs than administering 300 μ g dose which is currently in practice in our country for affording mothers. Besides, it also showed that the volume of FMH was >30 mL in 1.3% and 2.7% of the cases as calculated by KBT and FCM respectively which need more than 300 μ g dose RhIG for neutralization. Further investigation into the cost-effectiveness and scalability of patient-specific dosing of prophylactic anti-D appears warranted.

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