Inaccurate Doses of Rh Immune Globulin After Rh-Incompatible Fetomaternal Hemorrhage—Survey of Laboratory Practice

To the Editor.—The Ontario Quality Management Program—Laboratory Services, External Quality Assessment division published similar findings to Dr Ramsey’s recent article. We found that the Rosette and acid elution techniques were effective at detecting a fetomaternal hemorrhage (FMH) requiring additional units of Rh immune globulin (RhIg; sensitivity 1.0 and 0.96, specificity 0.75 and 0.92, respectively). However, acid elution lacked adequate precision and accuracy to reliably determine the volume of FMH present. In 8 external quality assessment (proficiency testing) surveys with an FMH present, the percentage of error of the calculated mean from the FMH was 20% or greater in all but 1 of the surveys and ranged as high as 70%. Coefficients of variation ranged from 39.5% to 71.8%. Of 278 proficiency challenges in which the FMH volume would require additional RhIg, 54 laboratories (19.4%) would have recommended inadequate RhIg dosage. Following the American Association of Blood Banks (AABB) strategy of administering an additional dose of RhIg over that required for the volume of FMH detected eliminated these errors. As a result, we recommended that all Ontario laboratories follow the AABB recommendations for RhIg dosing to overcome the limitations of this technique.

In our view, improving the effectiveness of RhIg dosing would require 2 things: (1) a more accurate calculation of maternal blood volume, such as Dr Ramsey’s RhIg Dose Calculator; and (2) replacement of acid elution FMH quantitation with flow cytometry in all cases in which additional RhIg doses are indicated by initial Rosette or acid elution test results. The latter could be accomplished in 2 ways: (1) have laboratories establish flow cytometry referral procedures, with results to be received within 72 hours, for all cases where the Rosette or acid elution techniques indicate additional doses of RhIg are required; and (2) encourage blood cell analyzer manufacturers to add FMH detection methods to the flow cytometry components of their complete blood cell count analyzers, eliminating the...
need for initial Rosette or acid elution testing and making an effective FMH detection and quantitation method widely available to most laboratories in the industrialized world where obstetric services are offered. The published findings of a large proficiency testing program, such as the College of American Pathologists, further emphasizes the potential effect of this latter option in improving laboratory and transfusion effectiveness and eliminating the risk of inadequate RhIg prophylaxis as a cause of failed Rh (D) alloimmunization.

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