



“Use of Intraosseous Samples for Commonly Performed Laboratory Testing”

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Conflict of Interest

- Nothing to disclose in regards to topic

Background

- In rare cases where a peripheral blood sample could not be collected, intraosseous samples (bone marrow aspirate) can be used for laboratory testing.
- This can be very important in acute management of some trauma or other urgent resuscitation requiring critical cases.
- We performed a study to validate the accuracy of routinely ordered laboratory test results on 20 bone marrow aspirate specimens collected from intraosseous devices and we compared the results with same patient's peripheral blood testing findings.

Methodology

- Blood and bone marrow specimens were run alongside each other following our laboratory testing procedures. (marrow samples were manually processed to remove particles and tissue debris)
- Results from ABO/Rh testing & antibody screening, complete blood cell count (CBC) and chemistry tests were compared for correlation.
- Values similar to peripheral blood findings with plus or minus 10% coefficient of variation (CV) were accepted as comparable.

Results

- Blood Bank tests :

ABO/Rh testing and solid phase antibody screenings revealed the same results for each patient's marrow and peripheral specimens.

- Hematology tests :

In CBC testing hemoglobin and hematocrit results correlated well between the two sample types, but platelets and white blood cell parameters were not consistent.

- Biochemistry tests :

- I. Glucose, Troponins, beta HCG, Creatinine, Calcium, Magnesium, Albumin, Urea, Sodium, Chloride, TSH correlated well
- II. Potassium, Lipase, CK, ALT, AST, LDH were not comparable.

Discussion

- Bone marrow aspirate specimens can be used to perform ABO/Rh testing in situations where a peripheral blood specimen cannot be collected.
- This allows for upfront ABO-compatible transfusion management of these patients and prevents any unnecessary use of precious O Rh negative red cell units.
- Hemoglobin and hematocrit values can be reported, but there is not enough evidence to support the release of the platelet, white blood cell counts and certain chemistry test results.
- In all cases, results should be confirmed with the first available peripheral blood sample.

Limitations

- All marrow samples were collected from adult, Hematology-Oncology patients, not healthy volunteers (sample bias)
- Testing platforms and methodologies varies among different laboratories, that is why we can not confidently say our results are applicable to every Lab.
- There is very limited published evidence in the literature, further studies with broad-spectrum patient and healthy volunteers needs to be performed

Thank You !

