

DISCREPANT GLUCOSE RESULTS IN THE NEONATE - NOVA STATSTRIP VS RADIOMETER

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BACKGROUND

- A neonatal glucose reading is used to evaluate glycemic status and determine treatment/intervention in a hypoglycemic neonate
- The goal is to keep glucose concentrations in symptomatic neonates above 45 mg/dL
- August 2011 new protocols were implemented narrowing the glucose ranges for differential treatment
- Whole blood glucose confirmation with the radiometer did not always match the Nova meter causing frustration for staff in treating neonates
- Actions taken to try to determine and eliminate the cause for the discrepant result:
 - Neonates heels were warmed to induce good perfusion
 - Different lancets were used: A tenderfoot lancet versus a 28 gauge lancet

PURPOSE

- To evaluate and determine if the cause of the discrepant glucose results was related to the whole blood method of the radiometer

METHODS

- Randomized comparative study of glucose levels in the neonate population
- Specimen Types:
 - Whole blood analysis-Radiometer ABL 800
 - Plasma and serum analysis- Siemens Vista
 - Plasma equivalent analysis-Nova StatStrip Meter
- Glucose was performed on the nursery Nova 1 via heel stick
- Nursery collected a green bullet for the lab
- Glucose was performed on the nursery Nova 2 via heel stick
- Green bullet was sent to the lab
- Lab performed glucose on the Nova in the lab

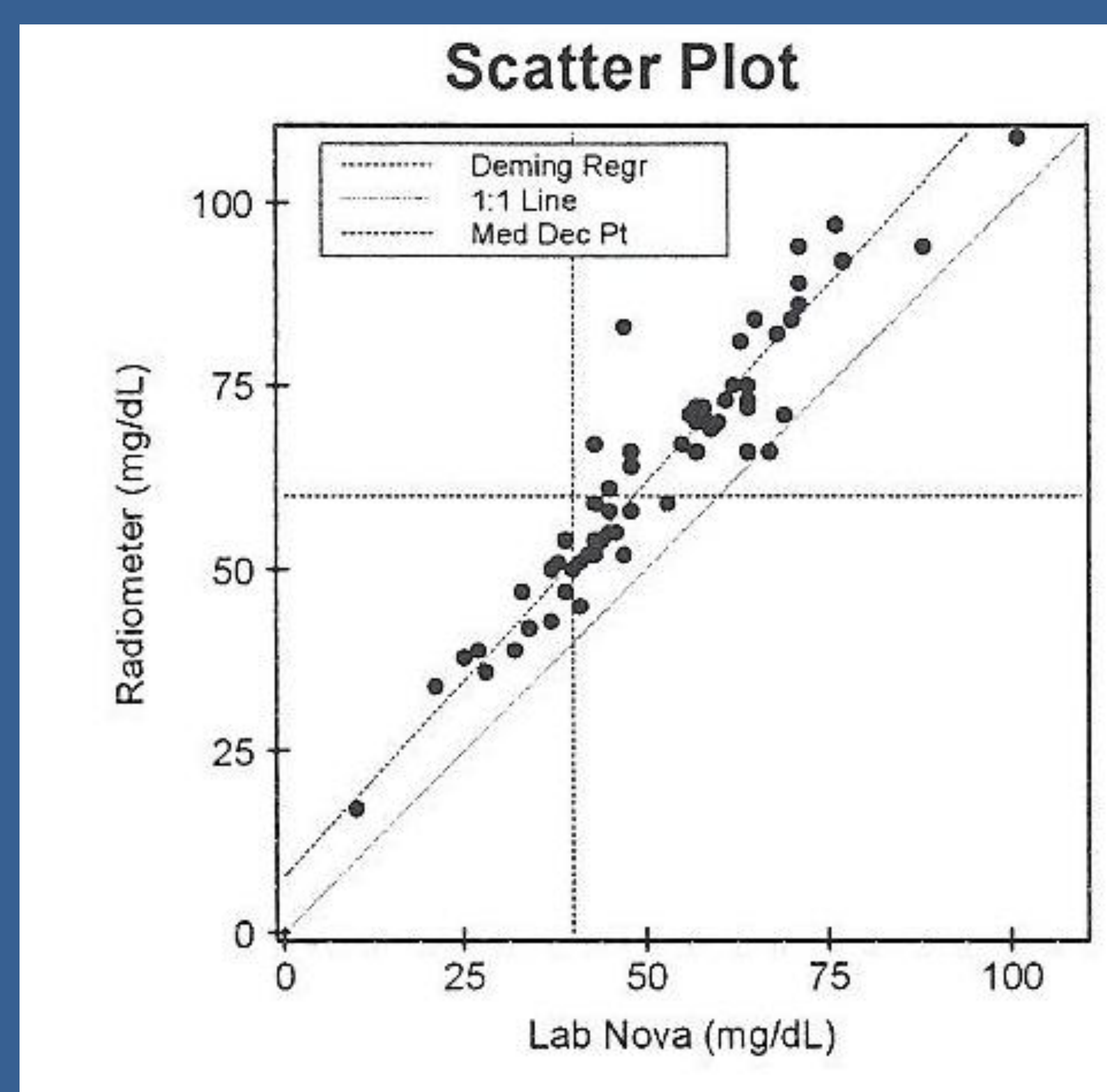
METHODS

- Lab performed glucose on the Radiometer
- Lab performed glucose on the Vista post centrifugation of the specimen

RESULTS

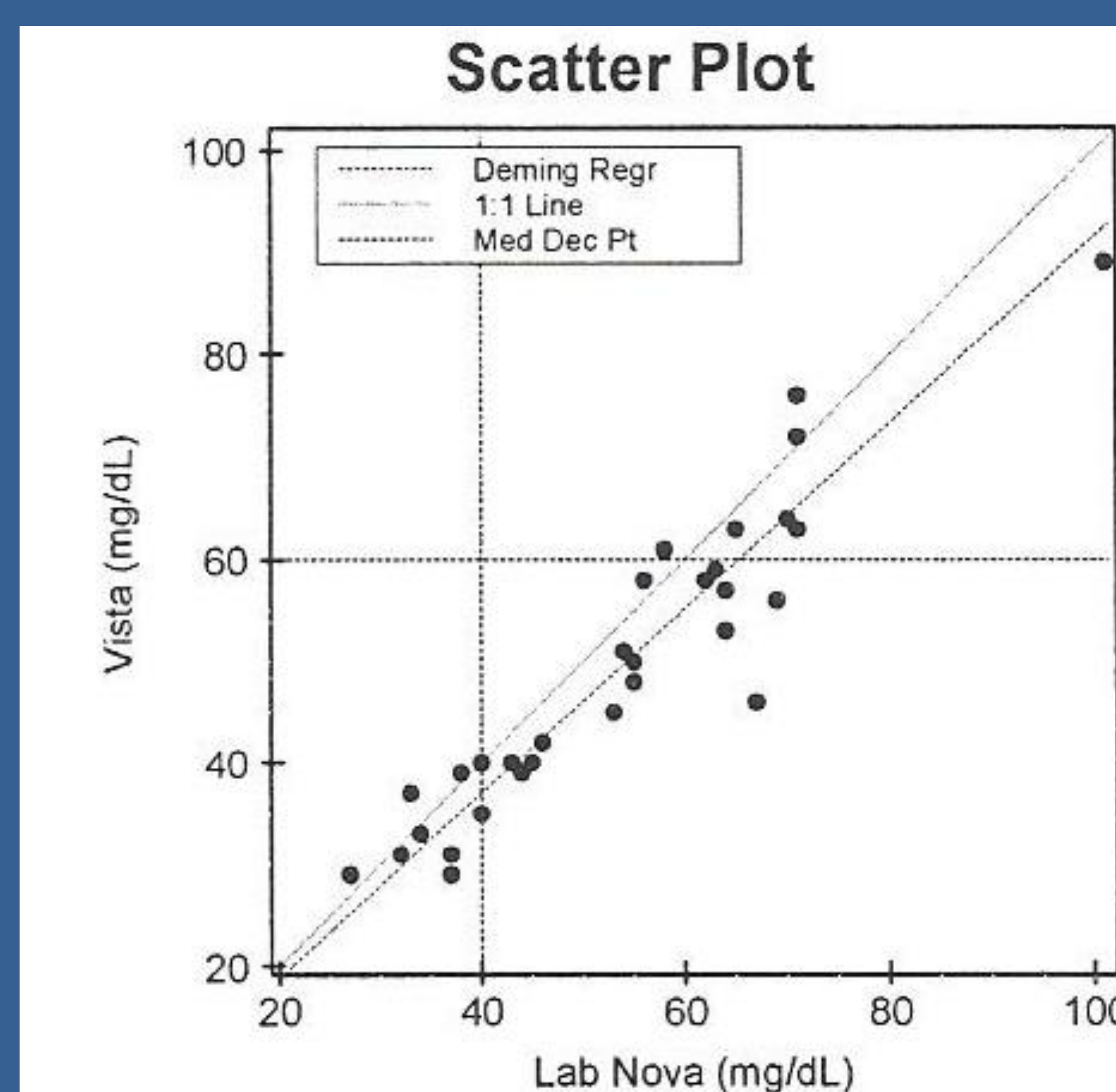
- 67 samples were collected, 27 samples were performed on all laboratory methods

Figure 1. Lab Nova vs. Radiometer



- Slope: 1.082, Int:7.7, R: 0.9465, Bias: 12.0 (high bias)

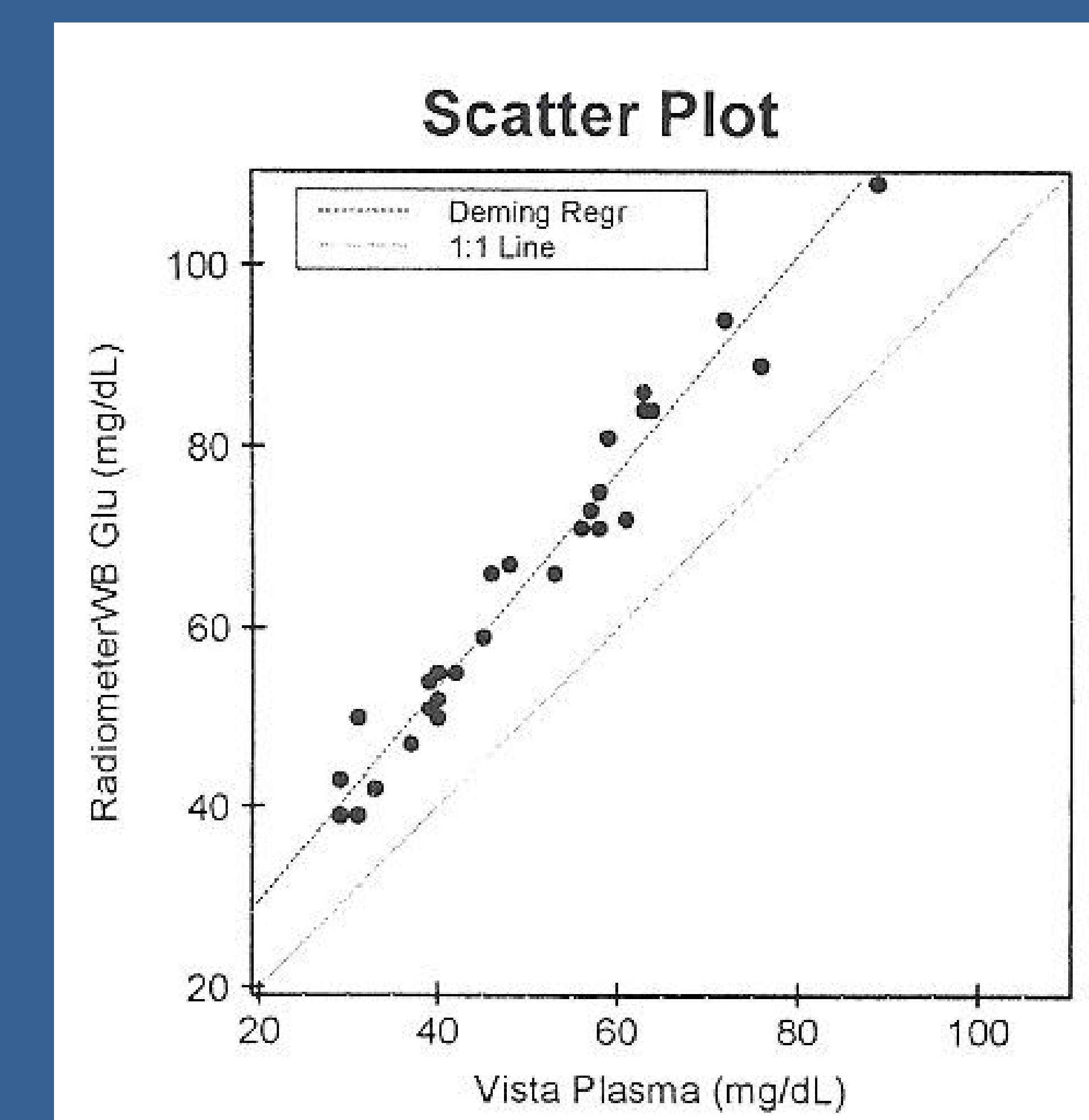
Figure 2. Lab Nova vs. Vista



- Slope: 0.909 Int: 0.7, R: 0.9403, Bias: -4.2 (OK bias)
- Statistically compare well illustrating good comparison

RESULTS

Figure 3. Vista vs. Radiometer



- Slope: 1.189 Int: 5.8, R: 0.9799, Bias: 15.2 (high bias)

LIMITATIONS

- Delay in delivery of the specimen to the lab may affect the lab results due to glycolysis
- The time between the Radiometer measurement and the centrifugation process for the Vista can be affected by glycolysis
- Small sample size between the Radiometer and the Vista

CONCLUSIONS

- Whole blood glucose on the Radiometer produces a higher glucose result than the Vista or Nova due to the hematocrit of neonates
- Nova meter to Nova meter compares well
- The Vista analyzer produces a more comparable result to the Nova meter than the Radiometer
- Instead of measuring the neonate glucose on the Radiometer in the lab, glucose levels of neonates will be measured on the Vista