Measurement of Recirculation without Peripheral Venipuncture

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Dear Sir,

Despite its limitations [1], the three-sample method is still widely used for blood recirculation estimation to detect underdialysis due to inadequate fistula blood flow. A peripheral blood sample is needed (three-needle method) to calculate the classical recirculation rate, which is uncomfortable for the patient and traumatic for his peripheral veins. Kobrin et al. [2] have proposed an interesting two-needle procedure avoiding peripheral venisection. Their protocol uses a blood sample obtained before dialysis from the dialysis fistula instead of a peripheral one obtained 5 min after the beginning of the session for the calculation of recirculation rate. Compared to the conventional method, no statistical difference was demonstrated during 12 hemodialysis sessions. Between 1993 and 1996, we prospectively determined the urea blood levels from hemodialysis access arterial limbs in our center, at each classical recirculation rate determination, in 82 hemodialysis procedures. We then compared the urea blood levels obtained to those taken from the peripheral sample at the time of the classical procedure, 5 min after the beginning of the session. The correspondence is shown in figure 1: urea blood levels are given as mil-limoles per liter, r2 correlation coefficient is 0.98, linear regression slope is 1.02. The proposal made by Kobrin et al. [2] is valid, correlation is here assessed on a large group, and the coefficient is high enough to allow this method to be used routinely. Fistula blood flow recirculation rate determination is a rough method to evaluate fistula malfunction. The three-needle method should be abandoned, since a method easier to perform for nurses and less traumatic for patients is available and provides a result very close to the peripheral sample venisection.

• Peripheral vs fistula urea

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Linear regression

95% confidence interval

95% predictive interval

1/8 30

t/ > CO

8

S 25

E 20A

Coefficients: b[0]: 0.4570127509 b[1]: 1.0204227346 ra: 0.9852239051

E

15

S 10-

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30

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10

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Peripheral venous blood urea levels 5 mn after starting hemodialysis

Fig. 1. Correlation between peripheral venous and initial arterial limb fistula blood urea.

References

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