β_2 -Microglobulin in Renal Transplant Recipients

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Dear Sir,

In a recent publication [1] the authors conclude that in renal transplant recipients decrements in renal function are more easily or more rapidly detected by changes in β_2 -microglobulin than in creatinine. Moreover Edwards et al. [2] reported that serum β_2 -microglobulin (S β_2 M) elevations up to 48 h prior to a rise in serum creatinine were accurate in predicting or diagnosing rejection in 91% of all patients.

In our Service we monitored S β_2 M and urine β_2 -microglobulin (U β_2 M) variations in 14 renal transplant recipients during a 24-month period in order to control such parameter sensitivity and validity in acute rejection diagnosis.

Controls were carried out from twice a week to once a month, according to each patient's visit frequency and clinical state. The results are summarized in table I.

In all we examined 26 acute rejection crises, 12 of which in 4 subjects with chronic rejection. In 22 cases

Table I. Clinical parameters of 14 renal transplant recipients during the 24-months follow-up period

False Clinical positivi- status I ties

1 At time of first sampling.

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(84,6%) contemporaneous S β_2 M rising was noticed (> 20% compared with previous control), while U β_2 M modifications were variable and unsteady. In 13 subjects controlled once a week at least, 4–7 days before the rejection crisis, S β_2 M rising was found eight times higher (61,5%), irregularly coupled with U β_2 M fall (three times) or rising (once).

In 47 dosages S β_2 M was found significantly higher without contemporaneous or subsequent alteration of other clinical or laboratory parameters. That was found 31 times in the 4 subjects with chronic rejection, 7 times in case of influenza syndrome, and 8 times without clear reasons. A highly meaningful correlation was noticed between S β_2 M and serum creatinine basal values ($y = 2.63 + 3.46 \log x$; $r = 0.72$, $p < 0.01$), but the correlation coefficient was lower than that found

in 32 nontransplanted subjects with various degrees of renal function ($y = 2.87 + 6.49 \log x$; $r = 0.90$, $p < 0.01$).

U β_2 M levels in 4 subjects (patients 2–5, table I), even if with variations among the various dosages, kept in normal range (0.1–0.35 mg/l); on the contrary, in 9 other patients (6–14, table I) the U β_2 M values, besides showing greater variations among various dosages, kept in a remarkably higher range than that of normal subjects (0.5–80 mg/l). In the latter group the incidence of acute rejection crisis (23 rejections/148 months) was significantly higher than in the former (2 rejections/96 months).

Therefore, the S β_2 M dosage provides a useful early information in case of acute rejection; nevertheless, it is to be considered an additional method, not a substitute for traditional procedures of rejection control as it may give false positivities.

On the contrary, U β_2 M has little importance in acute rejection diagnosis because only sometimes earlier alterations in elimination, characteristic of such state (sudden fall or rising), can be noticed. Yet U β_2 M basal values may allow a prognostic assessment on transplant future.

References

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