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Polish Journal of Pharmacology
Pol. J. Pharmacol., 2003, 55, 631–637
ISSN 1230-6002

PROXIMAL TUBULE DAMAGE IN PATIENTS TREATED WITH GENTAMICIN OR AMIKACIN

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Proximal tubule damage in patients treated with gentamicin or amikacin. P. WILAND, J. SZECHIŃSKI. Pol. J. Pharmacol., 2003, 55, 631–637.

The present study aimed to determine the relationships between time of administration and dose of aminoglycosides, the extent of proximal tubule damage, evaluated by the urine N-acetyl-β-D-glucosaminidase (NAG) activity, and to compare proximal tubule dysfunction in the patients treated with gentamicin and those receiving amikacin. The measurement of activity of NAG in urine was chosen to monitor of proximal tubule function.

The studies were performed in 25 patients, who had to be administered gentamicin or amikacin by intramuscular injections. In both groups, the maximum NAG activities in urine were detected most frequently after the 7th day of the therapy. A significant difference in NAG activities in urine was noted between the values observed in the course of treatment with aminoglycosides and those determined before start of the treatment.

NAG activity in urine significantly decreased following discontinuation of aminoglycoside antibiotic administration. The activities did not decrease quite to the pretreatment level but the remaining difference proved to be insignificant. In the course of aminoglycoside treatment, 7 patients demonstrated an increase in serum creatinine levels exceeding 0.4 mg%. It should be stressed that no pronounced differences in nephrotoxicity and, in particular, in their potential to induce injury to the proximal tubule have been disclosed between gentamicin and amikacin. Their significant, damaging effect on integrity of proximal tubule was demonstrated, which was evidenced by the clear increase in urinary NAG activity during administration of either drug. Nevertheless, only in a small fraction of such cases (12–16%), the increase promoted development of renal insufficiency, usually of a transient character. Monitoring of the increase in urinary NAG activities in line with observations on creatinine levels permits to distinguish a subgroup of patients who may be suspected of development of overt nephrotoxicity. In such cases cessation of aminoglycoside administration is required.

Key words: *gentamicin, amikacin, tubular dysfunction, N-acetyl-β-D-glucosaminidase (NAG) urinary excretion*

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