Response

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Dear Sir,

I am pleased that Dr. Arellano agrees with the primary intent of our report [1], namely, to increase awareness of gentamicin-induced nephrotoxicity in the sick neonate.

Dr. Arellano is correct in stating that measurements of beta-2-microglobulin excretion cannot be used for discriminating between proximal tubular injury induced by gentamicin and by other causes such as perinatal hy-poxia, septicemia, or renal ischemia. Data in human infants regarding gentamicin nephrotoxicity are confusing for a number of reasons. Infants of different body weight and gestational ages are studied at different postnatal ages and varying methods of renal function assessment are used. Since renal function undergoes a rapid maturational change in neonates, developmental increases in glomerular filtration rate and tubular function may obscure the negative impact on renal function of modest nephrotoxicity caused by gentamicin [2]. Sick neonates for whom gentamicin is prescribed commonly exhibit a number of risk factors such as hypoxia and acidosis which should predispose them toward nephrotoxicity. Thus, determining the possibility of aminoglycoside contribution to increased beta-2-microglobulin excretion requires the need for a 'control' population of ill neonates not receiving gentamicin. This need was fulfilled in our present study [1].

Although long-term follow-up after treatment interruption would be interesting, our study designed to evaluate only the short-term nephrotoxicity of gentamicin.

Unfortunately, the diagnostic significance of the reported data on amylase-creatinine clearance ratio [3] is of limited value for the developing kidney. Creatinine clearance is not a reliable estimate of glomerular filtration in neonates (falsely high plasma values of creatinine due to placental transfer), errors in urine sampling, and methodological problems [4]. Any of these variables would inval-

idate the reliability of amylase-creatinine clearance ratio as an index of proximal tubular injury in newborn infants.

Until one clinically useful estimate of the effect of gentamicin or other aminoglycosides on the renal function of neonates is proved reliable, the quest for that ideal method will surely continue. Until then, measurements of urinary beta-2-microglobulin remains the most sensitive predictor of tubular dysfunction in newborn infants [5,6].

References

Assadi, F.K.; Chow-Tung, E.: Renal handling of beta-2-micro-globulin in neaonates treated with gentamicin. Nephron 49: 114–118 (1988).

Arant, B.S. Jr.: Developmental patterns of renal functional maturation compared in the human neonate. J. Pediat. 92:705–712 (1978).

Aderka, D.; Tene, M.; Graff, E.; Levo, Y.: Amylase-creatinine clearance ratio. A simple test to predict nephrotoxicity. *Archs intern. Med.* 148:1093–1096 (1988).

Portman, R.J.; Kissane, J.M.; Robson, A.M.: Use of beta-2-microglobulin to diagnose tubulointerstitial renal lesions in children. *Kidney int.* 50:91–98 (1986).

Adelman, R.D.; Wirth, F.; Rubio, T.: A controlled study of the nephrotoxicity of mezlocillin and gentamicin plus ampicillin in the neonate. *J. Pediat.* 77:888–993 (1987).

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E.D.; Perlman

J.M.; Robson

A.M.: Renal injury in sick newborn infants: A prospective evaluation using urinary beta-2-microglobulin concentration. *Pediatrics* 57:432–440 (1988).