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APPENDIX III

[From the New England Journal of Medicine, vol. 279, No. 23, Dec. 5, 1968]

RENAL FAILURE AND INTERSTITIAL NEPHRITIS DUE TO PENICILLIN AND METHICILLIN*

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Abstract Nephropathy due to penicillin or methicillin was observed in seven patients. Maximum dosage ranged from 20 to 24 gm. per day for methicillin and from 20,000,000 to 60,000,000 units for penicillin. Fever appeared in a minimum of eight days, associated with marked eosinophilia and rash (in four patients). Urinary abnormalities and azotemia (blood urea nitrogen of 50 to 130 mg per 100 ml) occurred in all. All but one recovered. Renal tissue, examined in four patients, showed tubular damage and interstitial accumulation of mononuclear cells and eosinophils without glomerular abnormalities or arteritis. In the only patient investigated immunologically an unusually intense immune response to penicillin was found. Immunofluorescent studies showed penicilloyl hapten firmly bound to his kidney tissue and the presence there of gamma globulin. The clinical features of an allergic reaction together with the immunologic findings support, but do not prove, a hypersensitivity mechanism for this nephropathy.

Since the introduction of penicillin G (benzylpenicillin) as an antibiotic, 15 cases of nephropathy have been ascribed to this drug. (1, 11) In general these reactions have been attributed to hypersensitivity, and in the few cases in which pathological material has been available, the kidney has shown the lesions of periarteritis with proliferative or necrotizing glomerulonephritis. In none of the reports, however, was there convincing evidence that the nephropathy was in fact due to penicillin therapy.

In contrast, the evidence for nephropathy due to methicillin (dimethoxyphenylpenicillin) appears to be well documented. Thirteen cases have been cited in the literature since 1961, (11, 17) and they were characterized by a rather typical clinical picture consisting of fever, rash and eosinophilia with hematuria, proteinuria and occasionally some degree of renal insufficiency; clinical recovery occurred in all. The pathological findings in the kidney have been reported in only 2

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NOTE.—Numbered references at end of article.