

Renal Involvement in Multiple Myeloma; Multivariate Analysis of a Large Unselected Autopsy Population

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Aim. To determine the frequency and type of renal lesions in myeloma patients regardless of renal function, multivariate analysis of clinical and histological findings in a large, unselected autopsy population was performed.

Methods. After reviewing all autopsies performed in our province from 1975 to 1986, 63 cases of multiple myeloma with complete clinical and histological data were identified. Clinical variables included sex, age, serum total proteins, albumin, immunoglobulins, creatinine, uric acid, blood urea nitrogen (BUN), calcium, urine total proteins and Bence Jones proteinuria. Histological variables comprised glomerular and tubular lesions including casts and giant cell reaction, interstitial lesions, vascular alterations and calcium deposits. Principal component analysis was used to define the variables which accounted for the greatest proportion of the variance, and cluster analysis to categorize the patients based on the presence or absence of those variables. ANOVA and Scheffe's Procedure were used to confirm the significance of the statistical approach.

Results. Multivariate analysis allowed the division of the patients into five clinical categories: groups 1 and 2 were characterized by tubular atrophy and casts (early and late – the classical myeloma cast nephropathy); groups 3 and 4 were distinguished by arteriosclerosis, not correlated with age and strictly associated with isolated interstitial inflammation; the patients in group 5 had no renal lesions.

Conclusions. A novel statistical approach divided unselected autopsy patients with multiple myeloma into five clinical categories. While cast nephropathy was confirmed as a frequent finding, interstitial inflammation associated with arteriosclerosis was also found to be a component of the myeloma kidney. This entity and the validity of the clinical categories deserve further analysis in a prospective study.

Key words: giant cells; inflammation, interstitial; multiple myeloma; multivariate analysis; kidney disease