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Computerized interstitial fibrosis quantification is the most powerful histological predictor of renal outcome in ANCA-associated vasculitis


1. Department of Nephrology, Hôpital Européen Georges-Pompidou, Paris, France
2. Pasteur Institute, Paris, France
3. Department of Pathology, Hôpital européen Georges-Pompidou, Paris, France
4. Hôpital Cochin, Paris, France

Introduction. – Renal involvement in ANCA-associated vasculitis (AAV) is characterized by necrotizing crescentic glomerulonephritis (GN). Although a new glomerular-based histological classification has been proposed, its prognostic value is still debated. The aim of this study was to evaluate the prognostic value of computerized color image analysis of renal biopsies in AAV.

Patients. – We included 65 patients with AAV and biopsy-proven renal involvement. All renal biopsies were centrally classified according to the recently defined classification and divided in local GN (fGN 50% normal glomeruli), crescentic GN (cGN ≥ 50% crescent), mixed GN (mGN) or sclerotic GN (cGN ≥ 50% globally sclerotic). Computerized interstitial fibrosis (IF) was analyzed with a specific software, using a colour segmentation imaging technique. The IF score was expressed as the ratio of fibrotic tissue area/total renal tissue area.

Results. – Renal function was defined by a mean serum creatinine of 433 ± 265 μmol/L. ANCA specificity was mostly anti-MPO (65%). Pathological classification showed fGN in 40%, cGN in 30%, mGN in 25%, sGN in 5% of patients. Mean IF score was 29 ± 11.6%. IF score was statistically associated with a former history of diabetes or hypertension, with anti-MPO, with arteriosclerotic lesions on the renal biopsy. There was no correlation between IF score and glomerular classification. Renal prognosis was defined as the proportion of patients with CKD stage 4/5 at 12 months. This endpoint was reached by 19% of patients. We found that the presence of sGN is associated with a poorer outcome, but we did not observe significant differences between the other categories. On the contrary, the IF was statistically associated with renal prognosis: the IF score was 35 ± 10% among patients with subsequent CKD 4/5, vs. 25 ± 10% (P < 0.01).

Conclusion. – Our study failed to correlate the glomerular classification with renal outcome. We show that quantification of IF on the renal biopsy, with a computerized method, can predict 1-year kidney function in AAV.

http://dx.doi.org/10.1016/j.lpm.2013.02.039

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The necessity of the addition of interstitial pathological parameters on the glomerular histological classification to predict the long-term outcome in MPO-ANCA-associated RPGN cohort in Japan

E. Muso1, T. Endo1, M. Itabashi2, Y. Iwasaki3, H. Kakita1, Y. Tateishi1, T. Komiya1, T. Ihara1, W. Yumura2, T. Sugiyama2, K. Joh1, K. Suzuki1

1. Division of Nephrology, Kitano Hospital, The Tazuke Kofukai Medical Research Institute, Japan
2. 4th Dept Internal Medicine, Tokyo Women Medical College, Tokyo, Japan

Introduction. – The newly proposed classification categorized into focal, crescentic, mixed, and sclerotic classes showed prognostic value for 1- and 5-year renal outcomes in European cohort [1]. However, this is not adaptable in Japanese cohort dominant with microscopic polyangiitis (MPA) showing no significant difference between crescentic and mixed group and mixed showed more favorable prognosis [2]. The evaluation whether the addition of tubule-interstitial parameters is more predictive for renal outcome was performed in Japanese cohort.

Patients. – Eighty-seven patients, diagnosed ANCA-associated glomerulonephritis were analyzed retrospectively. All glomeruli obtained were categorized in four groups proposed by Berden et al. [2]. In addition, the severity of interstitial fibrosis and tubular atrophy was categorized into three grades (< 50%, 50–74%, 75%). Estimated(e) GFR and renal survival were analyzed at onset, 6 months, 1 year and 5 years after renal biopsy.

Results:

– all were MPA in Japan;
– in mixed group, 5 years outcome of patients with severe interstitial damage were significantly poorer than those with mild damage;
– in focal group, those with high interstitial fibrosis showed low eGFR from entry to 5 years;
– in sclerotic group, almost cases accompanied severe interstitial fibrosis with very low eGFR from entry.

Discussion. – MPA and GPA might have different progression course of renal injury, partly due to pre-existing nephrosclerosis in MPA which often occurs in more elderly patients than in GPA. The evaluation based on only glomerular lesion is not enough for long-term renal prognosis in Japan dominant with MPA.

Conclusion. – In Japanese MPA oriented AAV patients with GN, histological classification combining with glomerular and chronic tubulo-interstitial parameters might bring about more predictive potential for long-term renal outcome, especially in mixed group.

References


http://dx.doi.org/10.1016/j.lpm.2013.02.040

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Long-term outcome in patients with both ANCA and GBM positivity

A. Tanna1, S. Mcadoo1, F. Tam1, T. Cairns1, M. Griffith1, A. Salama2, J. Levy1, C. Pusey1

1. Imperial College, London, United Kingdom
2. University College, London, United Kingdom

Introduction. – Anti-GBM disease is now considered a form of vasculitis [1]. The co-existence of anti-GBM and ANCA antibodies is rare. There are few data regarding long-term outcomes of these patients [2]. We assessed the long-term outcome of “double positive” patients in our centre.

Patients. – Double positive patients with a minimum of 2 years follow-up at our centre, were identified. Electronic and paper records were reviewed and outcome data collated. A comparison was made with