LETTER TO THE EDITOR
Iran J Allergy Asthma Immunol
December 2014; 13(6):456-458.

Oxford Classification of IgA Nephropathy Is Applicable to Predict Long-Term Outcomes of Henoch-Schönlein Purpura Nephritis

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Received: 9 March 2014; Received in revised form: 18 May 2014; Accepted: 2 June 2014

Keywords: Crescents; Henoch–Schönlein purpura nephritis; IgA nephropathy; Oxford classification

Henöch-Schönlein purpura nephritis is a small vessel vasculitis that can involve not only the kidneys but also the gut, joints and skin, to varying extents.[1] In contrast, IgA nephropathy is recognized as a renal-limited, non-systemic disease.[1,2] However, Henöch-Schönlein purpura nephritis and IgA nephropathy share many immunological, histological and clinical features.[1-3] Indeed, IgA nephropathy and Henoch-Schönlein purpura nephritis are thought to be related diseases.

Like IgA nephropathy, increased levels of galactose-deficient IgA1 (Gd-IgA1) are identified in patients with Henoch–Schönlein purpura complicated by nephritis, and Gd-IgA1 is currently supposed to have a pivotal role in the pathogenesis of both IgA nephropathy and Henoch–Schönlein purpura nephritis.[2-4] Additionally, IgA-containing complexes have been found in the glomeruli of IgA nephropathy and Henoch–Schönlein purpura nephritis patients. The prevalence of HSP is difficult to assess from the literature. It is generally agreed that the incidence of HSP decreases with age. Pathogenesis of Henoch-Schönlein purpura nephritis is not completely understood, however it has pathologically been regarded as a specific immune-mediated entity induced by environmental factors, particularly infections.[1-5]

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Pathophysiologic mechanisms of Henoch-Schönlein purpura nephritis including complement activation, glomerular fibrin deposits, crescent formation in the glomeruli and vascular damage, appear to play an important role. C_3 deposits are seen in a vast majority of patients with Henoch-Schönlein purpura nephritis.[2-5] Hypocomplementemia generally has not been seen in Henoch-Schönlein purpura nephritis, however, excessive consumption and deposition of C_3 in the kidneys may have been the cause of reduced C_3 serum level in a severe Henoch-Schönlein purpura nephritis case. Except for the IgG content and bigger size of the circulating IgA-containing complexes and the higher incidence of increased IgE plasma levels in Henoch–Schönlein purpura nephritis, no major biologic differences have been found between the two illnesses. Henoch-Schönlein purpura nephritis is a systemic vasculitic disorder.[5-7]

The common clinical pattern of IgA nephropathy is an indolent progressive illness with slowly increasing proteinuria and loss of kidney function with flair-ups of macroscopic hematuria.[2-6] In contrast, Henöch-Schönlein purpura, presents most often with an initial acute episode, accompanied by complete healing in the majority of patients.[3-7] Continuing proteinuria and progressive chronic kidney failure happen in a minority of patients. While, nephritic or nephrotic syndromes are more often seen at presentation in Henöch-Schönlein purpura nephritis, end-stage kidney failure caused by Henöch-Schönlein purpura nephritis is infrequent in

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adults.[2-7] Compared with the high incidence of IgA nephropathy among adult-onset glomerular diseases, Henöch-Schönlein purpura nephritis rarely occurs in adults.[4-8] Notably, there are considerably fewer reports examining the kidney outcomes of Henöch-Schönlein purpura nephritis than evaluating the kidney outcomes of IgA nephropathy.[3-9] Additionally, the sample sizes of the investigations are relatively small. Generally, 15–20% of adult patients with IgA nephropathy reach end-stage kidney failure within 10 years from apparent disease onset and up to 25–34% within 20 years.[5-9] The risk of developing end-stage kidney failure in adults with Henöch-Schönlein purpura nephritis is 20–25% within 10 years after diagnosis, which was revealed from some studies. In pathological aspect of view, both diseases are indicated by the presence of mesangial IgA deposits, proposing that both have a common pathogenic mechanism.[4-9] Currently, Henöch-Schönlein purpura nephritis is believed to be a systemic form of IgA nephropathy, and it has been reminded that the two situations are different manifestations of a single disease process. However, extracapillary (crescent) and endocapillary proliferation and also glomerular fibrin deposits are more frequent in Henöch-Schönlein purpura nephritis than in IgA nephropathy.[1-8] The proportion of extracapillary proliferation is related to the severity of clinical signs and to the prognosis of Henöch-Schönlein purpura nephritis in most studies. They are often seen in association with endocapillary cell proliferation and capillary wall destruction. The presence and extension of extracapillary proliferation are related to the finding of subendothelial and mesangial immune deposits of IgA and complement.[6-10]

Oxford Classification for IgA Nephropathy

Recently, the Oxford classification, a new classification for IgA nephropathy, was developed by the renal pathology society and the working group of the international IgA nephropathy network and has been validated in many investigations.[1-4] This group recognized four morphologic features associated with the progression of renal disease: mesangial hypercellularity score (M; M0 ≤0.5, M1 >0.5), the presence of endocapillary proliferation (E; E0: absent, E1: present) and segmental glomerulosclerosis/adhesion (S; S0: absent, S1: present), and the severity of tubular atrophy/interstitial fibrosis (T; T0 ≤25%, T1: 26–50%, T2 >50%)(1-6).

Morphologic Lesions of Henöch-Schönlein Purpura Nephritis, Presented by International Study Group of Kidney Disease in Childhood (ISKDC) Pathology Classification

Morphologic lesions have been classified by the [International Study Group of Kidney Disease in Childhood (ISKDC) pathology classification] in five categories (I, II, III, IV, and V) according to the presence and number of crescents. There is, however, a lack of agreement regarding the utility of crescents as a long-term predictor.[1-5,7-12] Actually, the presence of extracapillary proliferation is a prominent histologic feature of Henoch–Schönlein purpura nephritis that represents an important prognostic factor. Various studies have shown that a high percentage of crescents predicts adverse kidney outcomes, while others did not. Thus, there is need for a reliable proven, morphologic classification that can help clinicians more accurately formulate treatment strategies for patients with Henoch–Schönlein purpura nephritis.[2-6,10-15] Class I includes minimal glomerular abnormalities, and is the only class without long term complications and class VI is used for a membranoproliferative aspect, also a rough appreciation of mesangial hypercellularity is also respected in this classification. However, some other studies show that low grade histologic lesions can also lead to chronic kidney disease and that high grade lesions can heal definitively. However, the ISKDC classification does not consider some other important well-accepted morphologic lesions such as interstitial and glomerular inflammation, tubular atrophy, interstitial fibrosis (IFTA), crescent characteristics (localized or completely surrounding the glomerulus, fibrotic or not), segmental sclerosis, and various vascular lesions like arteriosclerosis.[4-7,10-18] This classification also takes no immunostaining data into consideration. In fact, the significance of some of the morphologic lesions, was studied in French patients of Henöch-Schönlein purpura nephritis. They found that interstitial fibrosis and the proportion of sclerotic glomeruli, but not crescents, were associated with a poor kidney prognosis. Hence crescents, as the main histologic feature of Henoch-Schönlein purpura nephritis, only reflect active inflammation, and may not be suitable for predicting long-term outcomes.[4-7,10-19] Recently to test, whether the new Oxford classification of immunoglobulin A nephropathy can be used to predict long-term outcome in patients with Henoch-Schönlein purpura nephritis, Ho Kim et al. conducted a study on 61 biopsy-proven

patients with Henoch-Schönlein purpura nephritis.[17-19] In addition to the ISKDC grades, morphologic lesions were also examined by the Oxford classification. Among the components of the Oxford classification, patients with endocapillary hypercellularity and tubular atrophy/interstitial fibrosis had lower renal survival rates than those with E0 and T0. In this study, the extent of crescentic lesions was not associated with having pronistic implication. They suggested that the Oxford classification can be useful in predicting long-term outcomes of Henoch-Schönlein purpura nephritis.[19] Recent observations suggest that histologic documentation should consider all morphologies having prognostic implication using a new detailed histologic classification similar to that recently published for IgAN. This classification, should consider, the mesangial cellular score, the presence and extension of glomerulosclerosis, the integrity of the Bowman's capsules, endocapillary hypercellularity/ inflammatory cells infiltration, cellular versus fibrotic crescents, and finally interstitial fibrosis /tubular atrophy. Considering that Henoch–Schönlein purpura nephritis and IgA nephropathy have common characteristics of pathogenesis and histopathologic findings, we postulate that, the Oxford classification could also help predict long-term outcomes in Henoch–Schönlein purpura nephritis. Therefore, we suggest to applicate the Oxford classification for patients with Henoch–Schönlein purpura nephritis.

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