Limitation of Kidney Biopsy in Detecting Crescentic Lesions in IgA Nephropathy

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Dear Sir,

Whether cellular crescentic lesions are present or not is one of the important factors in predicting the prognosis of patients with IgA nephropathy (IgAN) [1], and consequently affects the choice of therapeutic interventions. However, cellular crescents are usually distributed in a focal manner, especially in the milder or early phase of IgAN. Therefore, the accuracy in detecting crescentic lesions may depend to a large extent on the size of the biopsy specimen [2]. In an attempt to clarify the limitation of kidney biopsy in detecting cellular crescentic lesions in IgAN, we investigated the relationship between the size of biopsy specimens and the frequency of the presence of cellular crescentic lesions in 206 subjects with IgAN.

Renal biopsy specimens were obtained by surgical (184 cases) or percutaneous (22 cases) needle biopsy. Two specimens were obtained from each patient. About two-thirds of each specimen from the same patient was processed for light microscope (LM) study. The remaining one-third of each specimen was processed for immunofluorescence and electron microscope study. The number of glomeruli and the presence or absence of cellular crescentic lesions were examined in two sections of each specimen for LM study from the same patient. In addition to the relationship between the incidence of the presence of cellular crescentic lesions and the total number of glomeruli in the biopsy specimen, the relationship between the incidence of cellular crescentic lesions in one of two specimens (the smaller one and the larger one) and the number of glomeruli in the smaller specimen was examined. The incidence of cellular crescentic lesions in one of the two specimens was determined by the following formula: the number of subjects in whom cellular crescentic lesions were present in one specimen and absent in the other/the total number of subjects in whom cellular crescentic lesions were present, including those with lesions present in both specimens and those with lesions present in only one of the two specimens. The relationship between the total number of observed glomeruli in two specimens and the incidence of the presence of cellular crescentic lesions is shown in figure 1. The incidence of the presence of cellular crescentic lesions increased with the total number of glomeruli. When the number of glomeruli is > 30 , the incidence of the presence of cellular crescentic lesions reached approximately 60%.

The relationship between the number of glomeruli in the smaller specimens and the incidence of cellular crescentic lesions in one of the two specimens is shown in figure 2. In total, of 206 subjects, 105 contained cellular crescentic lesions in both or either specimen. The presence of

cellular crescentic lesions in one specimen was observed in 68 out of 105 subjects. The incidence of the presence of cellular crescentic lesions in one specimen decreased with the number of glomeruli in

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Incidence of cellular crescentic lesions, %

20 40 60 80 100

10

11-20

21-30

Incidence of cellular crescentic lesions in one of two specimens, %

80 100

6-10

.5

as li-is

16-20

o

Fig. 1. The relationship between the total number of glomeruli in two specimens and the incidence of the presence of cellular crescentic lesions in 206 subjects with IgA nephropathy.

Fig. 2. The relationship between the number of glomeruli in the smaller specimen and the incidence of cellular crescentic lesions in one of the two specimens in 105 IgA nephropathy subjects with cellular crescentic lesions.

smaller samples. Even in 7 subjects containing > 20 glomeruli, the presence of cellular crescentic lesions in one specimen was observed in 3 subjects.

From our data (fig. 1), it is suggested that at least 60% of patients with IgAN essentially have cellular crescentic lesions in the kidney. It has been reported that a biopsy sample of 20 glomeruli is the minimum necessary to confidently exclude focal disease [3]. In practice, it is quite difficult to obtain > 20 glomeruli for an LM study by percutaneous needle biopsy. Moreover, our results (fig. 2) indicate that even in biopsy samples of > 20 glomeruli, the incidence of false negative for crescentic lesions may account for 40% of the cases. These observations show that it is extremely difficult to confidently exclude cellular crescentic lesions in biopsy specimens, especially when such specimens are obtained by percutaneous needle biopsy.

References

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