Re: Role of Electron Microscopy in Evaluation of Native Kidney Biopsy: a Retrospective Study of 273 Cases

IJKD 2012;6:154-9
www.ijkd.org

Dear Sir,

I have read with interest the article by Mokhtar and colleagues, published recently in your esteemed journal.[1] The authors have explored the role of an important modality of electron microscopy (EM) in the pathologic evaluation of kidney biopsies. The learned authors have rightly pointed out the indispensability of EM study for an accurate diagnosis of many kidney diseases, particularly glomerulopathies, and that it is carried out routinely in most nephropathology laboratories in the developed world. They have also elegantly outlined the evolution of the use of EM and the immunoflourescence (IF) techniques in the study of kidney diseases. Indeed, the latter two tools have contributed enormously to our understanding of the pathological mechanisms underlying a wide variety of kidney diseases, especially the glomerular diseases.[2]

On the other hand, the situation in most of the developing countries is just the opposite of that in the developed countries. Most laboratories in these countries report kidney biopsies based on light microscopy (LM) only, a practice that may lead to an overdiagnosis of some diseases and an underdiagnosis of others. Very few studies have been reported on the role of EM in the investigation of kidney biopsies from the developing countries.[3-5] We have earlier evaluated the role of IF and EM in the investigation of kidney biopsies in 200 cases of nephrotic syndrome in both the adults and children. Our conclusion was that EM is useful for an accurate diagnosis of glomerular diseases in a vast majority of cases of nephrotic syndrome in both adults and children, and its role is as relevant in developing countries as in developed countries.[3]

It is worth reiterating here that in reviewing the studies on the use of EM in kidney biopsy evaluation, there is a marked variation in the inclusion criteria used by different authors with equally varying rates of usefulness reported.[1-5]

Mokhtar and colleagues have also rightly stated that more recently, with more frequent use of IF and increasing economic pressure on health care, the routine use of EM has come under critical scrutiny, even in developed countries.[6] Electron microscopy is an expensive, labor-intensive, and time-consuming test, and many centers in North America and Europe have markedly decreased or even eliminated the use of EM study. Mokhtar and colleagues have done a commendable job by concluding that the usefulness of EM is no less important in developing countries than in developed countries. However, there are a number of weak points in the study, attention to which at the time of designing the study would have markedly strengthened the study.

The main weakness of the study is that the authors have included all kidney biopsies, with for example, vascular and tubulointerstitial diseases, for which EM is of little use. What was the point of using IF or EM on, for instance, the biopsies showing tubulointerstitial nephritis, pyelonephritis, or acute tubular necrosis? Moreover, both the primary and secondary kidney diseases are also included. It is well known that the usefulness of EM study is not uniform across all the medical kidney diseases. This may be partly responsible for the low percentage of usefulness of EM found in the authors' study.

The authors could also have critically analyzed the results of EM in the context of clinical information, in addition to those of LM and IF employed by them, to observe the impact on diagnosis. There are no demographic data, clinical indications, and laboratory data of the patients who underwent biopsies. Stratification of biopsies according to indications would have yielded more useful results.

In the Results section, it is stated that EM was noncontributory in 61% of cases, but in discussion, it is given that EM was not useful in 22%. Moreover, the percentages of usefulness of EM have not

been written uniformly at different places in the text or tables.

Among the fibrillary glomerulonephritides, how many cases belonged to fibrillary glomerulonephritis, and how many to immunotactoid glomerulonephritis? The role of serology in the diagnosis of lupus nephritis cannot be ignored, apart from clinical, LM, IF, and EM studies. The rate of usefulness of EM in the study by Pearson and coworkers is 75%, which is incorrectly written as 5%. In the Discussion section, it is stated that EM was useful in the chronic cases of LN, while in Table 1, the only case of class VI LN is listed in category C. Finally, reference 19 is wrongly cited and it does not relate to the diabetic nephropathy.

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