Renal Biopsies in the Elderly: Challenges and Caveats

By Manasi Bapat

The first chapter of the American Society of Nephrology's Geriatric Nephrology Core Curriculum reminds us that “the degree of humanity in our healthcare world will be made evident in the way we treat (or do not treat) our minorities, our underprivileged, our poor, our mentally indirn, those who have no voice to speak for themselves, and finally, the aged” (1).

The elderly population is among the fastest growing in the United States and accounts for a large percentage of those with chronic kidney disease (CKD). Kidney senescence causes gradual structural loss and functional decline during aging. In addition, the natural progression of cardiovascular disease; other systemic diseases, such as malignancies; and the elderly’s exposure to potentially nephrotoxic drugs place these patients at particular risk for new or worsening kidney disease.

I recently cared for a frail 74-year-old woman in my nephrology clinic who had worsening CKD and a new diagnosis of smoldering multiple myeloma. Because she was otherwise asymptomatic, the decision regarding initiation of chemotherapy was dependent on whether she had renal manifestations of myeloma-related kidney disease. When the patient asked me if she really needed chemotherapy to date.

In the current literature, biopsies in patients aged 65 years and older make up anywhere between 3% and 20% of total kidney biopsies done. However, 40% to 70% of biopsies in the elderly reveal lesions that would benefit from therapeutic interventions. Studies show that the two most common indications for biopsy in elderly populations are acute kidney injury and nephrotic syndrome of rapid onset. The two most common histologic findings in biopsies from these patients reveal membranous nephropathy (MN) and pauci-immune crescentic glomerulonephritis (4–6). Acute interstitial nephritis (AIN) is also exceedingly prevalent in the elderly. In one retrospective study from France, AIN was the most frequent histologic report. Histologic diagnosis in elderly patients may lead to targeted, successful treatment in 40% to 67% of patients or perhaps more important, advise against potentially harmful approaches (5–7).

Advanced age often raises concerns that renal lesions will be progressive. These patients usually have findings of fibrosis and sclerosis as a sequela of longstanding hypertension, atherosclerosis, and cardiovascular disease. There is also a question about risk versus benefit of the treatment strategies available (e.g., immunosuppressive and chemotherapeutic agents) as well as the likelihood of favorable response to therapy.

Because of the greater degree of progressive lesions and concomitant disease in elderly and very elderly patients, outcomes in these age groups have been worse than those in younger populations. Despite this, the literature still supports the use of conventional therapies in these age groups, including the use of immunosuppressive agents and cytotoxic therapies, with a general principle of using the lowest doses and the shortest durations to achieve the best results with the least toxicity (2). The decision to treat should be individualized on the basis of age, patient preference, long-term goals of care, and comorbid conditions.

Extensive research in epigenetics and DNA methylation experiments is currently underway to gain insight into mechanisms of disease and to develop useful biomarkers or prognostic indicators in disease courses. Epigenetic modifications in antineutrophil cytoplasmic antibody vasculitis are being investigated for potential insights into its pathogenesis and prediction of outcomes. There is an explosion of studies to discover novel biomarkers that may have a role in the detection of AKI and glomerular disorders (Gd-1gA1 for IgA nephropathy and suPAR for focal segmental glomerulosclerosis). Phospholipase A2 receptor is now increasingly being used as a marker for identifying primary membranous nephropathy since its discovery in 2009. These biomarkers could potentially allow noninvasive ways for clinicians to guide treatment decisions and even forgo renal biopsies in the elderly. Despite these exciting developments, renal biopsy remains the gold standard for the diagnosis of many kidney diseases.

Thankfully, my elderly patient ended up having an uneventful renal biopsy, which revealed chronic changes secondary to hypertension without any cast nephropathy or amyloidosis. She has managed to stay away from chemotherapy to date.

Manasi Bapat is a renal fellow at Mount Sinai Hospital in New York.

References


Table 1

<table>
<thead>
<tr>
<th>Post-biopsy complications</th>
<th>Elderly (n=26)</th>
<th>Young (n=184)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross hematuria</td>
<td>4*</td>
<td>7</td>
</tr>
<tr>
<td>Perinephric hematoma</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Need for blood transfusion/ hemodynamic compromise</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Intervention (bladder lavage due to clot obstruction)</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
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* P < 0.01