

## **SIGNIFICANCE STATEMENT**

Severe hypertension can induce renal thrombotic microangiopathy (TMA) and *vice versa* on the background of complement defects. Currently, the diagnosis of complement-mediated TMA among patients with severe hypertension is challenging, in part because specific tests to detect the relevant complement defects are not available. This manuscript describes the potential role of *ex vivo* C5b9 formation on microvascular endothelial cells to identify complement defects in patients presenting with TMA and severe hypertension. ESRD and re-occurrence of TMA after transplantation were common among patients with abnormal C5b9 formation at the time of acute TMA, resembling complement-mediated TMA. These observations point to complement defects as the key causative factor of ESRD and recurrent TMA after transplantation in a subset of patients presenting with severe hypertension.