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## Loin pain-hematuria syndrome associated with thin glomerular basement membrane disease and hemorrhage into renal tubules.

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### Abstract

Loin pain-hematuria (LPH) syndrome is a poorly understood disorder in which the patients, mainly young women, experience unexplained severe chronic unilateral or bilateral flank pain associated with gross and/or microscopic hematuria. By contrast, thin glomerular basement membrane (GBM) disease is generally thought to be a benign disorder, affecting males and females equally, in which the major manifestation is asymptomatic microscopic hematuria. Herein we describe seven patients (6 females, 1 male) in whom thin GBM appeared to be the cause of the LPH syndrome. The gross hematuria in these patients could be attributed to thin GBM disease because the renal biopsy demonstrated red cells in renal tubules (indicating glomerular hematuria) and the only glomerular abnormality present with thin GBM. In addition, the other causes of gross hematuria were excluded by appropriate testing. The flank pain in these patients might also have been the result of their thin GBM disease. This is suggested by renal biopsy findings of multiple renal tubules filled with red cells, apparently occluding the tubules. We suggest that occlusion of a relatively small fraction of renal tubules could cause renal pain if back-leak of glomerular filtrate occurred that was of sufficient magnitude to expand renal parenchymal volume and stretch the renal capsule. Preliminary observations suggest that treatment with the angiotensin converting enzyme (ACE) inhibitor enalapril importantly reduces the frequency and severity of the episodes of gross hematuria and flank pain in most patients. ACE inhibition might decrease glomerular hemorrhage in patients with thin GBM by decreasing glomerular hydrostatic pressure. We conclude that (1) Thin GBM disease can be the cause of gross hematuria, apparently as a result of rupture of thin GBM. (2) Rupture of thin GBM resulting in hemorrhage into renal tubules may be the cause of the flank pain and gross hematuria in some patients with the LPH syndrome.

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