Effect of Body Position on Renal Parenchyma Perfusion as Measured by Nuclear Scintigraphy


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Objectives

To compare differential renal perfusion in various body positions in healthy volunteers, to help postulate factors responsible for recurrent unilateral stone formation.

Methods

Ten volunteers with normal renal function and no history of urinary disease were evaluated with diuretic renography using mercaptoacetyl-triglycine. Scintigraphy was performed 1 week apart in each of three typical sleep positions (supine, left lateral decubitus, right lateral decubitus), and renal perfusion was measured.

Results

Symmetric renal perfusion was noted in all volunteers in the supine position. Subjects positioned in the left lateral decubitus position had a mean renal perfusion of 61.3% in the dependent (left) kidney, compared with 38.7% in the nondependent (right) kidney ($P<0.05$). In the right lateral decubitus position, the mean renal perfusion in the right kidney was 63.3%, whereas that in the left kidney measured 36.7% ($P<0.05$). Renal perfusion in the dependent kidney was increased when compared with the same kidney in the supine position in both the left and right kidneys.

Conclusions

Body position had a significant effect on renal perfusion as measured by nuclear renal scintigraphy. If altered renal blood flow contributes to urinary calculogenesis, these data suggest that the urinary and vascular milieu in the decubitus position may contribute to risk factors for stone formation.

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