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Ultrasound in Renal Cancer Screening - A Review of The Literature

Introduction: Renal cell carcinoma (RCC) is the seventh most prevalent neoplasm in the Western world with an increasing burden worldwide. Early-stage RCC is often asymptomatic and incidentally diagnosed using cross-sectional imaging. Given its low cost, lack of radiation or contrast exposure, and widespread accessibility, this review sought to examine ultrasound as a potential tool for early-stage RCC screening.

Methods: We conducted a comprehensive literature search using PubMed and Embase from 1982 to 2023. 177 articles pertaining to ultrasonography screening of RCC were identified. The title and abstract of each article were analyzed. 3 authors then examined full-text versions of articles marked for further review to determine if they met the inclusion criteria. Studies conducted on symptomatic populations or utilizing CT as the primary imaging modality were excluded.

Results: 9 studies satisfied our inclusion criteria. Key findings from these studies highlighted ultrasound as an effective tool for screening, suggested screening in high-risk asymptomatic patients, and identified a need to optimize screening guidelines to minimize costs and lower overdiagnosis of benign conditions.

Conclusions: Ultrasound, due to its accessibility, affordability, and effectiveness in detecting renal cancer stands as the optimal tool for a kidney cancer screening program although its effectiveness can depend on operator experience. Such a program can particularly benefit from screening patients with known risk factors including older age, male gender, smoking history, and immunosuppression. Integrating kidney screening into existing abdominal ultrasound screening guidelines could enhance both feasibility and cost-effectiveness.