American Society of Nephrology-ASP Junior Development Award in Geriatric Nephrology

AWARD RECIPIENT

Lesley A. Stevens, MD

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PROJECT

"Accuracy and Reliability of GFR Measurement in the Elderly"

MENTORSHIP TEAM

Roger Fielding, PhD
Anne Newman, MD
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The elderly are the fastest growing subset of the US population, and age-associated increases in chronic disease and disability have led to a significant financial burden on the health care system. Decreased kidney function and chronic kidney disease (CKD) are now recognized as an important risk factor for adverse outcomes in the elderly; however, the reasons for such outcomes remain largely unknown. Further investigation of the roles of decreased kidney function and CKD in unsuccessful aging may be important for development of treatments but requires accurate assessment of the level of kidney function.

Glomerular filtration rate (GFR) is the best overall measure of kidney function. GFR is difficult to measure in routine clinical practice due to the requirement for administration of exogenous markers, such as inulin or iothalamate, and frequent urine and blood sampling. Estimating equations based on serum creatinine are used for most clinical and research purposes. However, the level of serum creatinine is affected by chronic disease, reduced muscle mass, and malnutrition, which are more prevalent in the elderly population. There is active debate about the normal range for GFR as well as the accuracy of current GFR estimating equations in the elderly.

We are planning a large-scale epidemiological study to address these critical questions. The goal of the current proposal is to assess plasma clearance of iohexol as a simple and "user friendly" method to accurately measure GFR. Advantages of this method are that iohexol is not radioactive and plasma clearance avoids errors due to incomplete bladder emptying, which is common in an older population. The study will be conducted at the Jean Mayer USDA Human Nutrition Research Center on Aging (HNRCA) at Tufts University and the Division of Nephrology at Tufts-New England Medical Center. Successful completion of this project will form the foundation for a large scale research project to investigate normal levels of kidney function and its estimation in the population.

The support of the American Society of Nephrology-ASP Junior Development Award, together with the mentorship of Andrew S. Levey, MD, Roger Fielding PhD, Anne Newman, MD, and Mark J. Sarnak, MD, will allow me to enhance my knowledge and expertise in clinical research and geriatric nephrology. Specific aims are to develop knowledge in the geriatric aspects of nephrology, assessment of kidney function, and experience in experimental procedures for prospective studies of elderly human subjects. Coursework will provide didactic teaching about core topics that will not be explicitly learned in the development and implementation of the research project. Mentoring will facilitate my learning experiences and enhance my research experiences throughout this training period. Laboratory meetings, seminars, and presentations at the Human Exercise and Nutrition Laboratory at HNRCA and in the division of nephrology will provide me with an opportunity to participate, present, and learn about human studies and clinical research protocols as well as other advances in the field.