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ESTABLISHMENT OF CREATININE REFERENCE RANGES IN GERIATRIC POPULATION USING ROCHE P MODULAR.

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Background

Creatinine is produced via energy metabolism in muscle tissue, and released into the blood at a relatively constant rate depending on muscle mass. The kidneys maintain the blood concentration of creatinine in a normal range. Up to 20 % change in serum creatinine within an individual may be within population reference range. As the kidneys become impaired the creatinine level in the blood will rise, and abnormally high levels thus warn of possible malfunction or failure of the kidneys, sometimes even before a patient reports any symptoms; which makes this test fairly reliable indicator of kidney function.

Because plasma creatinine is inversely related to GFR the NKDEP strongly encourages all clinical laboratories to automatically report eGFR when serum creatinine is reported. An eGFR calculated from serum creatinine is a practical way to detect, evaluate, and manage people with chronic kidney disease (CKD), especially people with risk factors for CKD—diabetes, hypertension, cardiovascular disease, or family history of kidney disease—in whom CKD might otherwise go undetected and untreated.

Methods

We analyzed data collected from over 60,000 samples over a period of 3 months from patients tested in our laboratory. Patients with documented kidney problems, or intra-individual difference of more than 20 % were excluded from the calculation of the age-specific reference ranges. Patient data was separated into female and male, and into 6 age groups: <50, 51-65, 66-75, 76-85, 86-99, >100. Reference intervals were calculated using nonparametric analysis of data from 39,931 specimens.

Results

The reference ranges for female was from 0.6-1.5 mg/dL and for male 0.7-1.5 mg/dL, the mean levels in both genders increased with age. The lower limit of the reference ranges increased with age, the highest mean was observed in the >100 years old group.

Conclusion

The small change in the creatinine levels with age is probably due to the decrease in renal excretion which is most likely due to the decrease in muscle mass and thus in creatinine production. The increase in the >100 years old we noticed may be due to the decrease in renal blood flow.