ORIGINAL ARTICLE

Assessment of renal profile in geriatric population: An observational study

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ABSTRACT:
Background: The present study was conducted for assessing renal profile in geriatric population. **Materials & methods:** A total of 50 geriatric subjects of more than 60 years of age and 50 healthy controls were enrolled. Complete demographic and clinical details of all the subjects was obtained. A Performa was made and findings of clinical evaluation was recorded. Blood samples were obtained and renal profile was evaluated in all the patients. All the results were recorded and were analysed using SPSS software. Chi-square test and student t test were used for evaluation of level of significance. **Results:** Mean BUN levels among geriatric subjects and controls were 21.3 mg/dL and 15.6 mg/dL respectively. Mean serum creatinine levels among geriatric subjects and controls were 1.62 mg/dL and 0.98 mg/dL respectively. Significant results were obtained while comparing the renal profile among the geriatric subjects and healthy controls. Renal dysfunction was seen in 24 percent of the subjects of geriatric age group. **Conclusion:** Alteration of renal profile associated with age depends on the aging process of the renal system itself, as well as other associated comorbidities.
Key words: Endophthalmitis, Infection

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INTRODUCTION

The progressive decline of renal function with aging is not inevitable, because it is mainly due to comorbid conditions such as hypertension and diabetes. However, in the elderly there is a high prevalence of chronic kidney disease leading to the need for strategies to control cardiovascular risk - death being far more common than dialysis at all stages of kidney function. Serum creatinine, the most widely used surrogate marker of glomerular filtration rate (GFR), is inaccurate with increasing age, particularly in sick and/or malnourished elderly people; it shows the so-called creatinine blind area, and substantial variation between laboratory analytical methods. An alternative endogenous marker is serum cystatin C: it correlates better with renal function and has the potential advantage of improved precision of the assay, but its measurement is still much more expensive.[1-3]

There is no ideal way to assess renal function in the elderly. Serum creatinine level alone is often very misleading. Many geriatric patients with a "normal" serum creatinine level actually have a moderate renal impairment when GFR is estimated. The use of GFR estimation equations, such as the Modification of Diet in Renal Disease (MDRD) or the Cockcroft and Gault formula (CG), should increase the awareness among physicians about the accuracy of renal function.[4-7] Hence; the present study was conducted for evaluating the incidenceof postoperative infectious endophthalmitis in a known population.

MATERIALS & METHODS

The present study was conducted for evaluating the renal profile in geriatric patients. A total of 50 geriatric subjects of more than 60 years of age and 50 healthy controls (age group of 20 to 50 years) were enrolled. Complete demographic and clinical details of all the subjects was obtained. A Performa was made and findings of clinical evaluation was recorded. Blood samples were obtained and renal profile was evaluated in all the patients. All the results were recorded and were analysed using SPSS software. Chi-square test and student t test were used for evaluation of level of significance.

RESULTS

Mean age of the subjects of geriatric group and control group was 66.4 years and 32.6 years respectively. Mean BUN levels among geriatric subjects and controls were 21.3 mg/dL and 15.6 mg/dL respectively. Mean serum creatinine levels among geriatric subjects and controls were 1.62 mg/dL and 0.98 mg/dL respectively. Significant results were obtained while comparing the renal profile among the geriatric subjects and healthy controls. Renal dysfunction was seen in 24 percent of the subjects of geriatric age group.

Table 1: Comparison of renal profile

Renal profile	Geriatric subjects	Controls	p- value
BUN (mg/dL)	21.3	15.6	0.00 (Significant)
Serum creatine (mg/dL)	1.62	0.98	0.01 (Significant)

Table 2: Incidence of renal dysfunction of geriatric subjects

Renal dysfunction	Number	Percentage
Present	12	24
Absent	38	76
Total	50	100

DISCUSSION

Drug elimination through the kidneys is normally impaired in the elderly, both due to reduced renal blood flow and perturbations in glomerular filtration rate (GFR). In addition, elderly patients have much comorbidity, such as hypertension, diabetes, and atherosclerotic disease, which contribute to reduced renal function. This is the most important pharmacokinetic alteration in the elderly. Most drugs and their active metabolites are eliminated through the kidneys. Therefore dosage adjustment according to renal function is indicated for many drugs, in order to avoid accumulation of the drugs or their metabolites, adverse reactions and/or aggravation of renal impairment. However, it has been shown that these adjustments are inadequately made by clinicians.[7-11]Hence; the present study was conducted for evaluating the incidenceof postoperative infectious endophthalmitis in a known population.

Mean age of the subjects of geriatric group and control group was 66.4 years and 32.6 years respectively. Mean BUN levels among geriatric subjects and controls were 21.3 mg/dL and 15.6 mg/dL respectively. Mean serum creatinine levels among geriatric subjects and controls were 1.62 mg/dL and 0.98 mg/dL respectively. Significant results were obtained while comparing the renal profile among the geriatric subjects and healthy controls. Renal dysfunction was seen in 24 percent of the subjects of geriatric age group. Fliser D et al reviewed the currently used methods for assessment of glomerular filtration rate and their utility in elderly people.Serum creatinine is an unreliable indicator of glomerular filtration rate in elderly people, particularly in those who are sick or malnourished or both. Thus, more reliable glomerular filtration rate estimates should be employed whenever indicated, for example, timed creatinine clearance, serum creatinine-based equations such as the Modification of Diet in Renal Disease formula, or serum cystatin C. However, no single method may be satisfactory.Accurate assessment of renal function is a prerequisite for the correct management of elderly people at risk of developing chronic kidney disease; for example, those with diabetes, hypertension, and other clinical conditions that may considerably accelerate an age-related decrease in glomerular filtration rate.[11] Gowda S et al analyzed the present and newer markers of renal function tests which help in diagnosis of clinical disorders.An extensive literature survey was done aiming to compare and compile renal function tests makers required in diagnosis of diseases.Creatinine, urea, uric acid and electrolytes are makers for routine analysis whereas several studies have confirmed and consolidated the usefulness of markers such as cystatin C and β-Trace Protein. They conclude that further investigation is necessary to define these biomarkers in terms of usefulness in assessing renal function.[12]

Drenth-van Maanen ACet al determined the best method for estimating GFR in older adults. Renal function was classified into five stages according to the National Kidney Foundation Disease Outcomes Quality Initiative chronic kidney disease classification, as follows (in ml min−1 1.73 m−2): stage 1, eGFR ≥ 90; stage 2, eGFR of 60–89; stage 3, eGFR of 30–59; stage 4, eGFR of 15–29; and stage 5, eGFR < 15.Sixteen patients, 50% male, with a mean age of 82 years (range 71–87 years) and mean body mass index 26 kg m−2 (range 18–36 kg m−2), were included. On average, all formulae slightly overestimated GFR, as follows (in ml min−1 1.73 m−2): CG +0.05 [95% confidence interval (CI) −28 to +28]; CG with IBW +0.03 (95% CI −20 to +20); MDRD +9 (95% CI −16 to +34); and CKD-EPI +5 (95% CI −20 to +29). They classified kidney disease correctly in 68.8% (CG), 75% (CG with IBW), 43.8% (MDRD) and 68.8% (CKD-EPI) of the participants, respectively.The CG, CG with IBW, MDRD and CKD-EPI formulae estimate the mean GFR of a population rather well.[13]

CONCLUSION

Alteration of renal profile associated with age depends on the aging process of the renal system itself, as well as other associated comorbidities.

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