

Kidney Disease and Transplantation

Evaluating the Kidney Stones; are the Volume and Size Equal in One or Two Dimensions? Accustomed Inaccuracy

Musab Ilgi*, Kaya Horasanli and Sinan Levent Kirecci

Department of Urology, Sisli Hamidiye Etfal Research and Training Hospital, University of Health Sciences, Sisli, Istanbul, Turkey

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*Corresponding author

Musab Ilgi, Urology Clinic, Sisli Hamidiye Etfal Research and Training Hospital, University of Health Sciences, Sisli, Istanbul, Turkey, Tel: 0090 553 307 3468; Fax: 0090 212 224 07 72; Email: ilgimusab@gmail.com

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Abbreviations EAU: European Urology Association; CT: Computerised Tomography; RIRS: Retrograde Intrarenal Surgery; PNL: Percutaneous Nephrolithotomy; SWL: Shock Wave Lithotripsy

Introduction

Urinary lithiasis is a common disease, prevalence rates vary from 1% to 20%, according to gender, dietary, ethnic, the geographical, and genetic factors [1]. Urinary Stone recurrence rates around the 50% at ten years. Each year in the United States, people make more than a million visits to health care providers and more than 300,000 people go to emergency rooms for kidney stone problems [2]. Therefore; kidney stones are epidemiologically trouble for countries.

Discussion

Governments are spending huge budgets on a treatment of the renal calculi. While preferring to the appropriate methods, some parameters such as the stone position, size, location and features of the patients are crucial. This point has great importance for the patients to reduce complications, hospitalisation and urology visits and increase patient satisfaction. Especially labour loss, much more health expenses can genuinely effect on the government's policy. Therefore, urological societies and associations develop the guidelines to enlighten the way of surgeons and also patients [3]. According to last updated EAU Guidelines bigger than 2 cm calculi, PNL, between one and two cm depend on the features SWL and Endourology smaller than 1 cm stones should be under gone to SWL or RIRS as a first choice. Millimeter measurement does not reflect the real volume that is significant problems in here [4]. As a scientist; 23 mm length, 6 mm width calculi and 23 mm length 12 mm width stones's size couldn't be a similar in the evidence-based medicine. (Figure 1) There is not a convincing correlation between one and two dimensions. So, volumetric measurement prevents the discordance of the Stone size and interobserver variability and gives more certain aspects to approaching the Renal Stones treatment. A Volume which is a strong predictive factor related to the operative, fluoroscopy time and hospitalisation time was measured [5].



Figure 1: CT images show two different stones have similar length but their wideness different. So; their Stone volume also is a significantly different.

Conclusion

In our practice, we measure the Stone volume by using non-contrast CT coronal image with this formula: (stone width \times stone length $\times \pi \times 0.25$) $^{1.27} \times 0.6$). Herewith, we can arrange our stone treatment strategy easily and efficiently. The guidelines also should not ignore this dilemma in the pretreatment evaluation of urinary stones. Much more well-constructed volume measurement researches need to improve the renal stone burden detection methods with the new validate formulas and parameters.

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