Iraqi JMS

Published by Al-Nahrain College of Medicine
ISSN 1681-6579
Email: iraqijms@colmed-alnahrain.edu.iq
http://www.colmed-nahrain.edu.iq

Predictors of Successful Urinary Stone Treatment by Extracorporeal Shockwave Lithotripsy

Uday H. Mohammad *FABMS*

Dept. of Surgery, Section of Urology, Mosul Medical College, Mosul University, Mosul, Iraq

Abstract

Background In spite of the recent advances in the endoscopic treatment of urinary stones, extracorporeal shock wave lithotripsy (ESWL) is still the treatment of choice for most renal and upper ureteric stones; however the outcome depends on multiple factors.

Objective To investigate the effects of stone density, as measured by Hounsfield Units (HU) by non-contrasted computerized tomography (CT), stone size and stone location on ESWL treatment outcome of urinary calculi.

Methods A prospective study that included 65 patients. Data collection and patient evaluation were performed in Al-Salam Teaching Hospital in Mosul, in the period from March 2012 to December 2012. Patients were submitted to clinical, biochemical and radiological assessments followed by ESWL treatment. Statistical analyses using chi-square, analysis of variance (ANOVA), correlation, regression were performed for statistical significance between ESWL treatment, stone fragmentation and stone density, size and location in the renal pelvicalyseal system.

Results ESWL success rate was high (92%) for low density stones (< 500 HU). ESWL treatment outcome and stone size were inversely related. CT stone densities of 700 HU or less were almost always successfully treated by ESWL. CT stone density and stone size combined account for nearly 74% of the variation in the number of shock waves required to attain fragmentation. Stones located in lower calyceal area had less success rates.

Conclusion Stone density measurement is helpful to predict the success of ESWL for urinary stones, stones with higher density, large size and lower location may better be managed by percutaneous nephrolithotomy or endoscopic procedures.

Key words CT stone density, ESWL, none contrasted CT scan (NCCT).

Introduction

In spite of the recent advances in the endoscopic treatment of urinary stones, extracorporeal shock wave lithotripsy (ESWL) is still the first mode of treatment for most renal and upper ureteric stones especially those with size range of 10-20 mm [(1)]. The success rate of this treatment modality is in the range of 60-90% in various series [(2-5)]. Different techniques have been used to determine the chemical composition of urinary calculi *in vivo* as it is considered a valuable factor determining the outcome of ESWL [(6)]. However, the outcome of ESWL treatment depends on many factors including; stone size, site, composition and the presence of obstruction or infection [(7)]. Nowadays, Non-Contrasted Computerized Tomography (NCCT) is the best diagnostic modality to evaluate renal colic, to distinguish radiolucent urinary stones from tumors or blood