



An-Najah National University

**Faculty of Medicine and Health Sciences
Department of Medicine**

**Clinical and radiological predictors of early intervention in acute ureteral
colic**

Supervisor:

Dr. Faris AbuShamma

Dr. Sa'ed H. Zyoud

Dr. Mosab Mari

Dr. Ahmad Ghanim

Students:

Mohammad Waleed Alkarajeh

Mahfouz Ata' Ktaifan

Abdoh Noman Abdallah

Abstract

Purpose: Acute ureteric colic (AUC) is generally one of the most common reasons for emergency department attendance. Expectant management is recommended in non-complicated ureteral calculi. However, data regarding the optimal duration of observation or indications of early intervention (EI) is not well understood. This article describes the clinical and radiological factors that promote EI in non-complicated AUC.

Patients and Methods: An observational and retrospective cohort study. Patients with AUC diagnosed based on non-contrast computerized tomography (NCCT) between 2019 and 2020 were enrolled in the study. These patients were classified into two main categories: spontaneous passage of stone (SSP) and EI (within four to six weeks of diagnosis). In addition, a comparative analysis was performed to identify clinical and radiological variables that promote EI.

Results: One hundred and sixty-one patients were included. High WBCs is associated with a significant increase in EI. Forty-three percent (n=37) of patients with serum WBCs higher than 10 had an EI, while 23% had SSP (n=17) ($p<0.001$). High CRP level are also significantly associated with EI (n=36; 86%); ($p<0.001$). Upper and middle ureteral calculi are statistically associated with EI (n=54; 62%) in comparison to the SSP cohort (n=22; 30%) ($p<0.001$). EI is also linked to the maximal length of ureteric calculi (MCL) of 9 mm (6-13mm), and HU density of stone of 700 (430-990) H.U ($p<0.001$). Ureteric stone volume of 0.2 (0.06-0.3) cm^3 is significantly associated with EI ($p<0.001$). Ureteral wall thickness of 3 (2-3 mm), the presence of extrarenal pelvis (n=20; 23%), and AP diameter of renal pelvis 18 (13-28 mm) are all significantly associated with a higher rate of EI ($p<0.001$). Multiple binary logistic regression analysis showed MCL is the strongest predictor of EI.

Conclusions: MCL is an independent and robust predictor of EI in non-complicated symptomatic unilateral ureteral calculi. Biochemical variables and radiological characteristics based on NCCT can also act as an adjunct to promote EI in AUC.

Keywords: Ureteral calculi; Medical expulsive therapy; Spontaneous Stone Passage; Maximal length of ureteral calculi; Pyonephrosis