

**CRP AS A PREDICTOR FOR EARLY INTERVENTION IN PATIENTS WITH URETERIC CALCULUS(5-10 MM) – A PROSPECTIVE STUDY**

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ABSTRACT CRP(C-Reactive protein) is a non specific and useful inflammatory marker that can be used in ureteric calculus(5-10mm) management. This prospective study evaluates the utility of C-Reactive Protein (CRP) as a biomarker to predict early surgical intervention in patients with ureteric calculi measuring 5–10 mm. A cohort of 100 patients presenting with symptomatic ureteric stones were managed conservatively and followed up for CRP trends on day 1 and day 7. Patients with rising or persistently elevated CRP levels (≥ 6 mg/L) were more likely to require early surgical management. Among these, 79.4% underwent intervention, while only 20.6% achieved spontaneous stone expulsion. In contrast, most patients with normal CRP levels achieved spontaneous passage without surgery. The findings suggest a strong correlation between elevated CRP and failure of conservative treatment. CRP may thus serve as a reliable predictor to identify patients who are unlikely to benefit from medical management, allowing for timely surgical intervention and improved patient care.

KEYWORDS : C-Reactive Protein(CRP), Ureteric Calculus, Medical Management

INTRODUCTION

Ureteric colic is one of the most common causes of acute abdomen presenting to the emergency department, representing about 20% of all cases of urolithiasis. Inflammation of ureteric wall may constrict the passage of ureteric calculus which reduces the chances of spontaneous expulsion on conservative management. C-Reactive Protein (CRP) being an acute phase reactant elevates in almost all inflammatory conditions. CRP is used here determining the spontaneous passage of ureteric calculus(5-10 mm) in this study.

AIM AND OBJECTIVES

To determine whether CRP levels can predict the need for early surgical intervention (URSL with DJ stenting) in symptomatic ureteric calculus.

MATERIALS AND METHODS

The sample size was estimated to be 100 patients over the age of 18 years during the study duration of six months. Ureteric calculus measuring 5–10 mm were subjected to conservative management for spontaneous passage (Tab. Silodosin 8 mg at night). CRP levels were estimated on day 1 and day 7 from the time of presentation of the patient. CRP value less than 6 mg/L was considered normal, taken as 'negative' in the case study; CRP value more than or equal to 6 mg/L was taken as 'positive'. Patients who demonstrated elevation in CRP level from day 1 to day 7 were considered for early surgical intervention.

Table 1 : Age Wise Distribution

Age(Yrs)	No. of patients	Percentage
18-25	14	14%
26-35	23	23%
36-45	25	25%
46-55	20	20%
>55	18	18%
Total	100	100%

Sample Size Estimation

Sample size will be estimated by using the proportion of spontaneous expulsion of the calculus in patients with negative CRP which was 90.9% from the study by Park CH et al. using the formula: $Z(1-\alpha/2)^2 (1-p)/d^2$, $p=90.9$ or 0.909 , $q=9.1$ or 0.091 , $d=5\%$ or 0.05 . Using the above values at 95% confidence level a sample size of 87 subjects with symptomatic ureteric calculus were included in the study. Considering 10% non-response a sample size of $87+13 \approx 100$ subjects were included in the study.

Statistical Analysis

All the demographic data obtained will be recorded in a semi-structured proforma and entered in an MS Excel spread sheet. Statistical analysis of the study will be conducted using the mean, standard deviation, and Chi-square test. A p-value of <0.05 will be considered as statistically significant.

Table 2 : Gender Wise Distribution

Gender	No. of patients	Percentage
Male	66	66%
Female	34	34%
Total	100	100%

RESULTS

Out of the 100 patients, 34 patients had positive CRP level on day 7, of which 27 patients underwent surgical intervention and 7 patients had expelled the calculus spontaneously at the end of two weeks. Remaining 66 patients had negative CRP level on day 7, in which 44 patients showed evidence of spontaneous calculus expulsion within one week and for 15 patients calculus expelled at the end of two weeks and 7 patients did not observed spontaneous expulsion of the calculus at the end of two weeks and required surgical management. This study showed a statistically significant correlation between the positive CRP levels and the rates of spontaneous expulsion of ureteric calculus(5-10mm).

Table 3 : Correlation of CRP with Stone Expulsion Rates.

	CRP positive (>6mg/dl)	CRP negative (<6mg/dl)
Stone expelled	7	59
Stone not expelled	27	7
Stone expulsion rates	20.6 %	89.4 %

DISCUSSION

C-reactive protein (CRP) is a useful inflammatory marker that may help predict the need for early surgical intervention in patients with ureteric calculi measuring 5–10 mm. Elevated CRP levels often indicate significant local inflammation, infection, or obstruction, which can lead to failure of conservative management. Identifying such patients by using CRP level early can guide timely surgical decisions, potentially avoiding complications like sepsis or renal impairment. CRP is simple, cost-effective, and may be a valuable addition to current clinical assessment tools. Its use could improve patient satisfaction and treatment outcomes.

CONCLUSION

The study concludes that CRP can be used as a predictor for an early

intervention of symptomatic ureteric calculus. Patients with elevated CRP levels can be given option to undergo surgical intervention directly instead of giving medical management.

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