

LETTER TO THE EDITOR

Predictors of admission for patients presenting to the emergency department with renal colic

Dear Editor,

Renal colic is a common reason for presentation to the ED, accounting for approximately 0.6% of ED visits.¹ In a recent Australian cohort, about 20% of patients require admission to hospital wards for ongoing treatment and intervention, with the vast majority treated and discharged from ED or ED observation units (unpublished data, Western Health).

In the era of the National Emergency Access Target (NEAT)² that aims to get an increasing proportion of ED patients seen, treated and discharged (to home or ward) within 4 h, it would be useful to know if there were identifiable predictors of admission available early in ED assessment.

This was an unplanned post-hoc analysis of a dataset acquired by medical record review to validate predictors of urological interventions within 28 days in patients with renal colic. Data collected included demographics, clinical features, imaging results, ED therapeutics and intervention within 28 days. Multivariate

logistic regression analysis was used to identify predictors of ward admission. Predictor variables included in the analysis were age, gender, previous renal colic, estimated glomerular filtration rate (eGFR), white cell count >11, fever >38°C, pain score on arrival, time to pain score <2, morphine dose in the first 4 h, total morphine dose, maximal stone dimension on CT, presence of hydronephrosis and stone location (above or below mid ureter).

Two hundred and twenty-four patients were studied. Median age was 49 years, 79% were men, 22% were admitted to a hospital ward from ED and 75 (33%) required urological intervention within 28 days. Of those admitted to a hospital ward, 82% underwent urological intervention within 28 days.

Independent predictors of admission on multivariate analysis are shown in Table 1. In addition, presence of fever >38°C was 100% predictive of admission, but as there were only three patients with fever, this did not reach

statistical significance. No predictor was sufficiently strong to be clinically useful when used on its own.

In the 204 patients with complete data for the three independent predictors, we explored various combinations of them (Table 1). Even when all three were present (57 patients), only 49% (28 patients) were admitted with odds ratio for admission 6.5 (95% CI 3.2–12.2).

In summary, we did not find any predictors of hospital admission for patients with renal colic, which were sufficiently powerful to be clinically useful.

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Competing interests

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TABLE 1. Independent predictors of admission on multivariate analysis

Variable	Odds ratio (OR)	95% CI of OR	P value	Patients with this parameter admitted to ward (n; %; 95% CI)
eGFR <90	3.05	1.21–7.70	0.018	38/113; 29; 22–37
Maximal stone dimension >4 mm	4.63	1.98–10.83	<0.001	39/110; 36; 27–45
Presence of hydronephrosis	4.13	1.11–15.28	0.034	45/164; 27; 21–35
eGFR <90 + maximum stone dimension >4 mm	6.05	3.0–12.2		29/62; 47; 35–59
eGFR + hydronephrosis	4.17	2.0–8.8		36/105; 34; 26–44
Maximum stone dimension >4 mm + hydronephrosis	6.4	3.1–12.4		35/84; 42; 32–52
All three predictors	6.5	3.2–12.2		28/57; 49; 37–62

CI, confidence interval; eGFR, estimated glomerular filtration rate; n, number.

References

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2. Emergency Care Institute (NSW). NEAT-the basics. [Cited Oct 2014.]

Available from URL: <http://www.ecinsw.com.au/NEAT-the-basics>

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