

## Outcomes of acute interstitial nephritis treatment from a dedicated acute kidney injury clinic

Dr Mustakim Khandaker, Dr Rebecca Brown

Royal Liverpool University Hospital, Nephrology, Liverpool, UK

Correspondence: [mustakim.khandaker@rlbuht.nhs.uk](mailto:mustakim.khandaker@rlbuht.nhs.uk)

### INTRODUCTION AND AIMS:

Acute interstitial nephritis (AIN) is a condition that is detected in up to 27% of biopsies<sup>1</sup> in patients who present with acute kidney injury (AKI). Often the cause for AIN is an offending drug and the treatment is withdrawal of the suspected drug and corticosteroids, grade 1C recommendation from observational studies<sup>2</sup>. Previous literature suggests that early recognition and treatment results in better outcomes. AIN is an important cause for acute kidney injury and likely to be underdiagnosed particularly in the elderly population as some observational studies have suggested<sup>3, 4</sup>.

In our dedicated AKI clinic we have diagnosed and managed patients with AIN in an outpatient setting. We have undertaken a retrospective review of outcomes of these cases.

### METHODS :

Over a 12 month period 15 patients were identified as having had a kidney biopsy confirming a diagnosis of AIN. Information collected included the source of referral, whether kidney biopsy occurred within an inpatient or outpatient setting. Treatment was with prednisolone and removal of the offending drug. For patients who had an inpatient biopsy treatment was started immediately. For patients who had an outpatient biopsy, there was a significant delay (in some cases months) in starting treatment. We recorded the response to treatment using serum creatinine measured at 4 and 12 weeks after commencing treatment.

### RESULTS :

Mean age of patients 61 yrs.

5 male patients, 10 female patients.

7 inpatient biopsies, 8 outpatient biopsies.

Source of referral:

- 3 from general practice
- 4 from secondary care
- 8 from renal unit

Eosinophilia – 6 patients (mild 0.5 to 1.1).

Urine ACR (1 to 89.6) mean ACR 16 – no urine ACR present for 3 patients.

Pyuria – 10 patients.

Culprit drugs

- Proton pump inhibitors (8 patients)
- Antibiotics (5 patients)
- NSAIDs (4 patients)
- Apixaban (1 patient)

There was often a combination of PPI and antibiotics.

14 patients were treated with prednisolone. One patient did not have any treatment. The dose of prednisolone ranged from 25mg to 60mg (mean dose 36.25mg).

2 patients also had raised serum ACE.

1 patient got steroid induced diabetes and dose had to be reduced quickly.

1 patient recovered kidney function spontaneously within 6 months.

In total 3 patients recovered kidney function back to baseline.

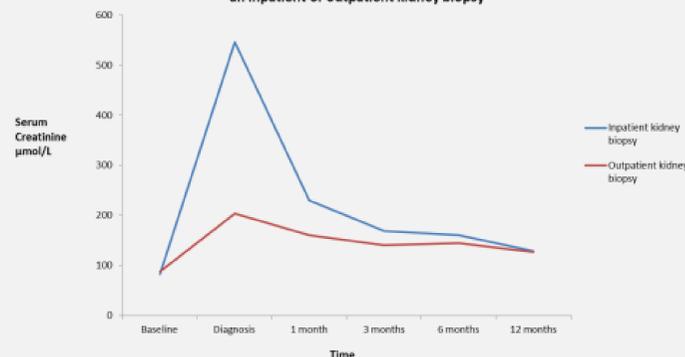
1 patient did not respond at all to treatment.

11 patients partially responded but had a degree of CKD.

**Table 1.** Showing source of kidney biopsy and mean creatinine at diagnosis, 4 weeks and 12 weeks (after starting treatment)

	Number of patients	Mean creatinine at diagnosis (µmol/L)	Mean creatinine at 4 weeks (µmol/L)	Mean creatinine at 12 weeks (µmol/L)
Inpatient kidney biopsy	7	546	230.43	168.86
Outpatient kidney biopsy	8	203.38	161.13	140.13

**Graph 1.** Showing the trend of average serum creatinine over 12 months in patients who had an inpatient or outpatient kidney biopsy



### DISCUSSION:

Results of investigations of patients seem to fit in with clinical features

- Pyuria
- Mild eosinophilia
- Some proteinuria

PPI most common culprit but several patients were on a combination of PPI and multiple antibiotics

Table 1 and Graph 1, show that patients do respond to steroids which is more dramatic in an inpatient setting. We found that inpatients biopsy patients have higher serum creatinine at diagnosis, while outpatient biopsies had lower serum creatinine. Most recovery appears to occur within 4 weeks and this seems more pronounced than the creatinine is greater. In the outpatient setting timing of starting steroids doesn't make much difference. Only three of our patients made a complete response after 12 months, one patient did not respond, the remaining patients had a partial response to corticosteroids.

### CONCLUSION:

- Steroids appear to be beneficial in reducing creatinine – more so when the creatinine is higher.
- Effects of steroids seem to be most pronounced in the first 4 weeks – probably shouldn't be on steroids longer than 6-8 weeks.
- Some patients did have a delay of several weeks before biopsy and commencement of steroids – so timing of giving steroids is not that important for outpatients.
- Dose of steroids vary but it appears 25mg is adequate – depends on the clinician.
- AIN can be safely managed in an outpatient clinic setting.

### REFERENCES:

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