

Near Drowning and subsequent Acute Renal Impairment in the Illawarra. Near drowning and its complications: A cohort study.

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ABSTRACT

Background:

In Australia, drowning accounts for less than 1% of all causes of death. It is known that there are many post-immersion associated complications. This study looked at the post immersion complications of acute renal impairment (ARI).

Methods:

An ethically approved retrospective cohort study of all identified immersion cases within the Illawarra was undertaken for the period from 1998 – 2004. The collected database was analysed using SPSS[®]. Looking at the outcome variables of acute renal impairment (were a serum creatinine was greater than 0.12 mmol/l), mortality, and their association with other possible influencing factors.

Results:

112 post-immersion patients were identified, of which 108 patients were eligible for inclusion. There were 10 cases of acute renal impairment (ARI), giving an incidence of 9.6%. Significant differences were found between the ARI patients and those with normal renal function. The ARI group was 14 years older on average (38.8 years to 24.3 years respectively) ($p < 0.05$). Gender composition was significantly different ($p = 0.02$), with 100% of the ARI group being male, compared to 63% in those with normal renal function. 56% of the ARI group was on medication at the time of the Near-drowning, this was significantly more ($p = 0.02$) than the 21% of the non-impaired group. 50% of the ARI patients had arrhythmia, and this was significantly more than the 7% of the non-impaired group ($p < 0.005$). The most significant arrhythmia ($p < 0.005$) was that of atrial fibrillation, it accounted for 80% of the ARI arrhythmias, compared to 60% of the non-impaired group. The ARI group had an increasing serum creatinine, which peaked within the first 24-48 hours (mean peak creatinine = 596 $\mu\text{mol/L}$), and then returned to baseline levels by 30 days. No patients required dialysis. There was significant association between 'mortality at presentation' and triage category ($p < 0.001$), site of the immersion ($p < 0.001$), prolonged immersion ($p < 0.05$), prolonged resuscitation ($p < 0.001$), and the Glasgow coma score ($p < 0.05$). No association was shown between renal impairment and mortality. No deaths occurred during the 30 - day follow-up.

Conclusion:

It appears that acute renal impairment following near drowning is a common occurrence, although there did not appear to be any significant associated mortality, and minimal morbidity. The study was not able to formulate any prediction modelling with the data obtained. The serum creatinine peaking in the first 24-48 hours, this is consistent with previous studies, but it has not been demonstrated that there is a trend back to baseline by 30 days. It is therefore suggested, that serial checking of the serum Creatinine be undertaken.