

Search outcome

Six papers found of which one irrelevant and two of insufficient quality for inclusion; the remaining papers are shown in table 1.

Comment

Studies are not of best quality. More rigorous prospective studies with larger numbers are required to make definite recommendations. Isolated sternal fractures caused by seat belts with no associated injuries and normal electrocardiography and chest radiology appear to be benign and can be discharged provided pain

not severe. The situation with sternal fractures caused by other mechanisms is less clear.

Clinical bottom line

Patients with isolated sternal fractures caused by seat belts who have a normal electrocardiography, chest radiography, and stable vital signs can be discharged.

- 1 Brookes JG, Dunn RJ, Rogers IR. Sternal fractures: a retrospective analysis of 272 cases. *J Trauma* 1993;35:46-54.
- 2 Hills MW, Delprado AM, Deane SA. Sternal fractures: associated injuries and management. *J Trauma* 1993;35:55-60.
- 3 Bu'Lock FA, Prothero A, Shaw C, et al. Cardiac involvement in seat belt related and direct sternal trauma: a prospective study and management implications. *Eur Heart J* 1994;15:1621-7.

Management of household electrical injury

Report by Wendy Dollery, *senior registrar*
 Search checked by Katrina Herren, *research fellow*

Clinical scenario

A 30 year old male electrician attends the emergency department having suffered an electrical shock while servicing a washing machine. There was no water involved.

Three part question

In [patients who have sustained a household voltage electrical injury with normal initial electrocardiography] is [admission for monitoring] necessary to [reduce the risk of sudden death from cardiac arrhythmias]?

Search strategy

Medline 1966 to 12/97 using the OVID interface. {[exp electrical injury OR exp burns electric OR electrical injuries. ti,ab,sh] AND [exp monitoring, physiologic or monitoring. ti,ab,sh]}

Search outcome

Forty four papers found of which 39 were irrelevant; the remaining papers are shown in table 2.

Comment

While there are numerous case reports in the literature of dysrhythmias developing after both 240 volt and high voltage electrical injury no studies have shown onset of dysrhythmia after initial assessment. Only observational studies were identified looking at household electrical injury and late onset cardiac arrhythmias.

Clinical bottom line

Routine cardiac monitoring is not required after household voltage electrical injury if the patient is asymptomatic and has normal initial electrocardiography. Asymptomatic patients involved in minor electrical events do not require investigation or admission.

- 1 Fatovich DM, Lee KY. Household electrical shocks: who should be monitored? *Med J Aust* 1991;155:301-3.
- 2 Cunningham P. The need for cardiac monitoring after electrical injury. *Med J Aust* 1991;154:765-6.
- 3 Bailey B, Gaudreault P, Thiverge RL, et al. Cardiac monitoring of children with household electrical injuries. *Ann Emerg Med* 1995;25:612-17.
- 4 Garcia CT, Smith GA, Cohen DM, et al. Electrical injuries in a paediatric emergency department. *Ann Emerg Med* 1995;26:604-8.
- 5 Wallace BH, Cone JB, Vanderpool RD, et al. Retrospective evaluation of admission criteria for paediatric electrical injuries. *Burns* 1995;21:590-3.

Table 2

| Author, date, and country | Patient group | Study type (level of evidence) | Outcomes | Key results | Study weaknesses |
|--|--|--|------------------------------|---|--|
| Fatovich and Lee, 1991, Australia ¹ | 20 patients exposed to 240 volts AC electric supply | Observational study, literature review | Initial ECG, cardiac monitor | 2/20 abnormal, no new abnormality detected | Retrospective, no statistical analysis |
| Cunningham, 1991, Australia ² | 70 patients exposed to 240 volts AC electric supply | Observational study, survey of management policy | Initial ECG, cardiac monitor | 11/59 abnormal, 6 deaths, no new abnormality detected | Retrospective, no statistical analysis |
| Bailey et al, 1995, Canada ³ | 151 children (age 8 months to 18 years) exposed to 120 or 240 volts AC electric supply | Observational study | Initial ECG, cardiac monitor | 1/113 abnormal, no new abnormality detected | Retrospective, missing data |
| Garcia et al, 1995, USA ⁴ | Patients aged less than 21 years exposed to minor (< 1000 volts) electrical injury | Observational study | Initial ECG, cardiac monitor | 2/53 abnormal, no new abnormality detected | Retrospective, missing data |
| Wallace et al, 1995, USA ⁵ | 26 children exposed to 120 or 240 volts AC electric supply | Observational study | Initial ECG, cardiac monitor | 1/17 abnormal, no new abnormality detected | Retrospective |

ECG=electrocardiography.