The relevance of hearing a crack in ankle injuries

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Abstract

Objective—To examine the predictive value of a crack noise or sensation in the history of injury in the diagnosis of ankle fracture.

Methods—A short questionnaire was filled in on 464 patients with isolated ankle injuries attending the accident and emergency department in a three month period from July to September. These patients were seen in the usual way in the department and the need for x ray assessed according to clinical judgement and existing departmental guidelines. Cases which subsequently proved to be other than ankle injuries, for example, fractured calcaneus, were excluded from the study.

Results—A positive history of hearing or feeling a crack did not indicate the need for an x ray or increase the possibility of a fracture; indeed the history of a crack made the presence of a fracture less likely. The clinical diagnosis of absence of fracture without radiological examination may require careful explanation to the patient.

Conclusions—Hearing a crack in the ankle does not suggest a fracture.

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Key terms: audible crack; ankle; fracture; x ray

Ankle injuries are common, making up over 5% of the work load in our department (2000+ cases in a year). Clear guidelines for radiography should reduce the number of unnecessary films taken and save considerably on cost. The cost of taking and reporting on an ankle x ray in this hospital is estimated as £30. Several studies have suggested indications for carrying out radiography in ankle injuries.^{1 2} However, patient expectations on attending the accident service often include the need for an x ray. This expectation may be enhanced by the

patient hearing or feeling a crack at the time of injury.

The aim of this study was to quantify the number of people who volunteered or admitted on questioning that they heard or felt a crack at the time of ankle injury. On the basis of clinical assessment and x ray findings, the significance of this symptom would be assessed.

Methods

A short questionnaire (figure) was filled in on 464 patients with isolated ankle injuries attending accident and emergency (A&E) department in a three month period from July to September. These patients were seen in the usual way in the department and the need for x ray assessed according to clinical judgement and existing departmental guidelines. Indications for radiography for ankle injuries on the first attendance are the presence of both bony tenderness and swelling around the ankle joint. This is based on the work of De Lacey and Bradbroke,² showing that no fractures requiring stabilisation are found in the absence of these signs, although there may be flake or avulsion fractures, indicating ligamentous injuries. All x rays taken were routinely reported the following working day by a radiological registrar and checked by a consultant radiologist. Cases which subsequently proved to be other than ankle injuries, for example, fractured calcaneus, were excluded from the study.

Results

Four hundred and sixty four patients were included in the study. Of these, 322 (70%) did not hear a crack, and 220 had ankle radiography (68%). There were 54 fractures (24.5% of those with ankle radiography). One hundred and forty two patients (30%) heard a crack (104 volunteered the information, 38 admitted it on questioning). Of these, 112 had ankle radiography (79%). Ten fractures were diagnosed on x ray (8% of those having radiography). The data are given in table 1.

A comparison of the rate of x ray for ankle injury during this study with that at different times outside the study is given in table 2. This shows that during the study the x ray performance rate was generally high. In those patients with a positive crack history it was considerably higher even than the highest rate

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A&E number		
	Yes	No
Swelling		
Bony tenderness		
Heard/felt a crack		
Volunteered		
Admitted		
X ray		
# seen by SHO (specify)		
# reported		

Ankle injury questionnaire.

Table 1 Proportion of fractures with negative or positive crack history

	Negative crack history	Positive crack history	Total
Attended	322	142	464
X ray done	220 (66%)	112 (79%)	332 (72%)
Fracture	54 (24.5%)	10 (8%)	64 (20%)

Table 2 A comparison of the rate of x ray for ankle injury during this study with that at different times outside the study

	Ankle injury	X ray	Fracture seen (% of x rays)
Jan (last month of SHOs' contract)	202	114 (56%)	24 (21%)
Aug (first month of SHOs' contract)	207	136 (65%)	18 (13.3%)
During study (3 month period)	464	332 (72%)	64 (20%)

of ankle x ray found when the new senior house officers began work in the following August.

Discussion

The history of a crack noise or sensation associated with ankle injury is not uncommon: it was volunteered in 104 patients (22%) and admitted to on direct questioning by a further 38 patients (8%). Although a "crack history" has never been suggested as an indication for x ray, this study suggests that it has been taken as such an indication. This may well reflect patient expectations. However, the converse

appears to be the case, that is, the presence of a positive crack history suggests that a fracture is less likely to be present. This being the case, it may be that such patients require more counselling about the nature and management of their injuries, rather than the often more expedient but decidedly more expensive alternative of radiology.

The source of the cracking sound or sensation is not ascertained but could be due to soft tissue tearing. This is well described as a symptom in Achilles tendon rupture. Thus the presence of this symptom could actually be suggestive of soft tissue injury and thus reduce the need for x rays in the absence of other clinical indications for radiology. In this study we did not look specifically for evidence of ankle instability which might be a consequence of ligamentous damage and this aspect may warrant further investigation.

1 Brandt DA, Frazier WH, Kohlhepp WC, Shea KM, Hoeffler AM, Ecker MD, et al. A protocol for selecting patients with injured extremities. Who needs X rays? *N Engl J Med* 1984;306:333-9.
2 de Lacey G, Bradborke S. Rationalising requests for x ray examination of acute ankle injuries. *BMJ* 1979;i:1597-8.

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