

## Audit on treatment and recovery of ankle sprain

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**Study Objectives:** The object of this study is to audit the care of ankle sprain of different severity and the functional limitations at two weeks and six weeks post injury of patients presenting to the Emergency Department of my hospital. **Methods:** Over a three month period, all patients presenting with acute ankle sprain were recruited at triage (index visit). Exclusion criteria were ankle injuries more than twenty-four hours old or had already received radiological evidence of fractures. A self-administered questionnaire was used to determine the severity and treatment. At second and at sixth week post index visit, three telephone interview attempts were made respectively to ask for the functional limitations and recovery using a standard questionnaire. **Results:** One hundred and thirty-nine candidates were recruited. Of these, 35.3% had mild, 19.6% had moderate and 15.2% had severe ankle sprain. Those with moderately severe ankle sprain have the least medical leave days. Only 48% were given more than 3 days of medical leave compared to 71% (mild group) and 76% (severe group). The treatment is otherwise similar across the three groups. Eighty-one patients (58%) and 70 patients (50%) were captured in the 2nd and 6th week telephone interviews respectively. Those patients with moderate severity fared worse with higher overall percentages in functional limitations and secondary consultations. This was more obvious in the 6th week telephone interview. **Conclusion:** Patients with moderate severity ankle sprain fared worse compared with patients with severe or mild ankle sprain over a six-week recovery period. This may be due to insufficient rest days given to this group of patients at initial presentation. (*Hong Kong j.emerg.med.* 2002;9:72-77)

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### Introduction

Ankle sprain is one of the most common minor orthopaedic injuries treated by both the emergency departments and the general practitioners. There are many studies done on different ways of treatment but none has truly been proven to be superior.<sup>1-6</sup> There are studies done on young athletes and military personnel on treatment and recovery of ankle sprains.<sup>7,8</sup> They showed that ankle sprain required much follow up and physiotherapy.

This study was done on the general population rather than only the young and fit. It evaluated and attempted to answer the following questions: (1) What is the standard of care for different severity of ankle sprain in our department? (2) How many patients still have functional limitation at 2 weeks and 6 weeks post injury? (3) How many patients need to seek further care after being given care by our department and what are the reasons for seeking further care?

### Methodology

Changi General Hospital is a regional hospital serving the East Side of Singapore, a service area of 750 000 people. We also serve as a referral centre for the army camps in our area and Changi prison. We have an annual attendance of 110 000-120 000 patients at the accident and emergency department.

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All patients presenting with acute ankle injury to the department from 7th October 2000 to 7th November 2000 were identified at triage. Exclusion criteria were ankle injuries that occur more than 24 hours ago, radiological evidence of fractures. There was a total of 139 patients who were eligible and recruited.

A self-administered survey form was filled by the doctor at the accident and emergency department on presentation of the injury (index visit). Between day 10 to 17 from the index visit, a maximum of 3 telephone calls were made to the patient to interview him or her by a blinded interviewer with a standardized set of questions. If after 3 telephone calls, we were unable to contact the patient, this was considered to be a non-respondent. A similar attempt for a second telephone interview was made at day 40 to 47 from the index visit with the same set of questions.

## Variables of interest

### *Initial injury characteristics*

The first medical visit at the accident and emergency department was considered the index visit. The biodatas of the patient was recorded: age and sex. The severity of the injury was assessed by the doctor: mild – normal gait, severe – unable to weight bear or take 3 steps, moderate – able to weight bear with analgic gait.

### *Management*

The acute management was categorized as: advice only, advice with crepe bandage, advice with crepe bandage and clutches, or casting and crutches. Medication given was categorized as: no medication, paracetamol, NSAIDs, oral opiate or more than one of the above. The number of days of medical leave and light duty given were documented. Follow up plan was categorized as: no follow up, appointment with family physician, appointment with orthopaedic speciality and appointment with physiotherapist.

### *Functional limitations at second and sixth week interviews*

Functional status of the patient was assessed by: ability to walk (gait), to do activities of daily living, problems coping with work and ability to do their usual sports.

They were also asked if they seek other consultations and the reason for seeking help.

## Analysis

Data are presented as percentages within the three classes of severity.

## Results

### *Characteristics of the study sample*

The total number of eligible study candidates was 139, 72% were male. Patients under 18 years of age constitute 16.5% while 4.4% were 50 years or older and 79.1% were between these 2 age groups. (Figure 1)

### *Acute management of ankle sprain*

The management of ankle sprain was similar regardless of the severity of the ankle sprain. Sixty to seventy percent of patients were treated with RICE (rest, ice compression and elevation) therapy advice and bandage. Seventy-one percent of those with severe ankle sprain were given clutches while only 19% of the moderate severity group were given clutches. None of those with mild ankle sprain were given clutches.

### *Medication*

Seventy percent of the patients were given NSAIDs for pain relief regardless of the severity. Fifteen percent of the patients were given more than one kind of medication, usually an NSAID with paracetamol.

### *Follow up and rest*

The number of days of medical leave and follow-up appointments given with respect to severity of ankle sprain are shown in Table 1.

**Table 1.**

Severity	Medical leave 1-3 days	Medical leave >3 days	Given follow-up appointment
Mild	29%	71%	18.40%
Moderate	36%	64%	37.70%
Severe	5%	95%	42.90%

Most of the follow-up appt were given to see the orthopaedic outpatient.

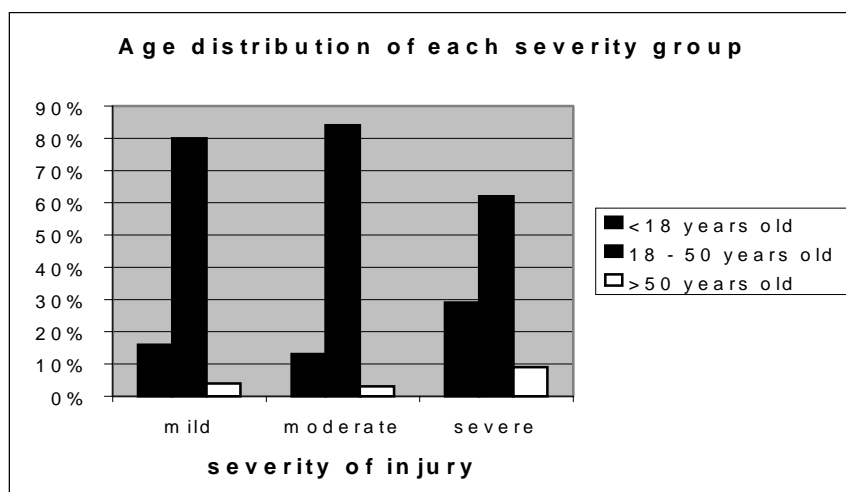


Figure 1. Age distribution of each severity group.

### Follow up

Eighty-one patients (58%) of patients responded to the 2nd week telephone interview. Seventy patients (50%) responded to the 6th week telephone interview. The biodatas of patients in the 2nd week and 6th week telephone interviews, with regards to sex and age, are similar. The severity distribution of the 2nd week and 6th week responders are similar to that of the index visit sample. (Table 2)

Table 2. Severity distribution.

Severity	At index visit	At 2nd week telephone interview	At 6th week telephone interview
Mild	35%	34.57%	34.29%
Moderate	50%	46.91%	45.71%
Severe	15%	18.52%	20.00%

Table 3.

Severity	At 2nd week, percentage of patients having problems in:				At 6th week, percentage of patients having problems in:			
	Gait	ADL	Job	Sport	Gait	ADL	Job	Sport
Mild	21%	0%	14%	61%	4%	0%	4%	36%
Moderate	50%	29%	21%	71%	6%	9%	13%	56%
Severe	40%	27%	20%	87%	0%	0%	7%	14%

Table 4. Reasons given by patients for seeking further consultation.

Severity	First 2 weeks from index visit				Subsequent 4 weeks			
	Pain / Medication	Second Opinion	Repeat Sprain	Others	Pain / Medication	Second Opinion	Repeat Sprain	Others
Mild	40%	40%	20%	0%	0%	33%	67%	0%
Moderate	9%	64%	18%	9%	18%	55%	27%	0%
Severe	100%	0%	0%	0%	0%	100%	0%	0%

### Functional limitations on follow up

Functional limitations of patients at 2nd week and 6th week telephone interviews are shown in Table 3. Figures are presented as percentages of the respondents at the respective week of telephone interview.

### Further consultation and reasons

Within two weeks from the index visits, 18%, 32% and 20% of the respective mild, moderate and severe groups seek further consultation. Over the subsequent four weeks, 12%, 37% and 29% of the respective mild, moderate and severe groups seek further consultations.

The reasons for seeking further consultations are summarised in Table 4.

## Discussion

### *Presentation*

The commonest group of the population that had ankle sprain who attended our department were male between the age of 18 and 50 years old. However, there were higher percentages of severe sprain in the younger than 18 and older than 50 years old compared with the other two severity groups. This may be due to the greater activity level and risk taking behaviour of the young, resulting in more severe injury. In the elderly, the presence of co-morbidity such as diabetes that affected proprioception and poor eyesight may be the cause of more severe ankle sprain.

### *Management*

The treatment within the department was "RICE" therapy advice and bandaging of the affected ankle with the use of clutches as necessary. This is irrespective of the severity of the sprain. Majority was discharged with an NSAID. Less than half of those with severe ankle sprain had follow-up appointments or advice. For those with mild and moderate ankle sprain, the follow-up care and advice were even less. There is presently no single treatment for ankle sprain that has been shown to be better. It was interesting that doctors in our department did not differentiate their treatment according to the different severity of ankle sprain.

Patients who were not given any medical leave were either not presently employed or retired. This group of patient should be considered to have prolonged medical leave, as they were able to rest more. Thus this group of patients were put into the having more than 3 days of medical leave category. Those with moderate severity were given the highest percentage of less than 3 days of medical leave, more than that of those with mild injury. This is surprising as we expect that the number of days of leave should correspond to the severity of the injury. This may be a factor to be considered when recovery is delayed.

Many studies showed that patients often have residual pain from ankle sprain.<sup>6,7,9</sup> They should be given advice

for follow-up appointment with a doctor if the pain persist. Physiotherapy sessions would help strengthen the ankle and lessen the risk of repeated injury. This was not consistently practised in our department. Most patients were not given any advice on prognosis in particular on duration of reduced activity needed and length of time whereby the ankle would still be painful. This was likely to be a major contributing factor for repeated consultation and patients seeking second opinion.

Most of the follow-up appointments were to the orthopaedic outpatient clinic, which is a waste of precious resources. The general practitioner and/or physiotherapist can adequately manage most ankle sprain follow-up. Orthopaedic appointment should be a third line follow-up if there are evidence of instability of the ankle joint after a trial of physiotherapy.

### *Functional limitation at 2nd and 6th week*

The response rate of 58% at 2nd week by telephone consult and 50% at 6th week consult were not optimal. However, analysis of the biodatas with respect to sex, age and severity of both 2nd and 6th week groups showed that they were similar to that of the index visit group. Thus, they were good representatives of the index group.

At 2nd week telephone consultation, those with moderate severity appeared to be most affected. They fared worse than those with severe sprain in all aspect except for limitations in sports. This was even more apparent at the 6th week telephone follow up. Patients with severe ankle sprain appeared to be in better form than both the mild and moderate severity groups. This was unlikely to be due to age, sex difference or treatment. One possibility is that it is the subjective perception of higher degree of improvement in the severe severity group resulting in a spurious finding on telephone enquiry. However, this is less likely as we assessed the extent of daily activities that they were able to participate in. If we assumed that the results were true, the cause may be due to insufficient medical

leave given to those with less severe sprain resulting in insufficient rest. This could result in delayed healing and prolong symptoms in this group of patients.

### ***Further consultation***

Twenty-five percent of patients who were not given any follow-up appointments seek further consultation within the first 2 weeks. A further 25 percent seek further consultation within the next 4 weeks. We found this figure high and thus did an analysis on those who seek further consultation.

Again, those with moderate severity had the highest rate of seeking further consultation. Unlike those of mild and severe ankle sprain, most of them seek consult for second opinion within the first 2 weeks. Whereas, the majority of the other group seek consult within the first 2 weeks for pain relief.

At 6th week telephone consultation, majority of patients who seek consult did it for second opinion. This was consistent with studies which showed that the standard care often result in patients who were still symptomatic 6 to 18 months post injury.<sup>3,5,6,15</sup> Doctors should advise patients of the expected duration of symptoms depending on patients' clinical condition to reduce waste of medical resources.

## **Conclusion**

The audit was done to answer the following questions for our department.

### ***(1) What is the standard of care for different severity of ankle sprain?***

Our doctors did not differentiate the type of treatment for different severity of ankle sprain. We treated all ankle sprains with "RICE" therapy advice, bandage and pain medication. Less than half of our patients received follow up appointment and when they did, it was to the

orthopaedic department. This is not a good use of resources. Thus with this audit, we have decided to implement a guideline to improve our treatment of ankle sprain.

### ***(2) How many patients still have functional limitation at 2 weeks and 6 weeks post injury?***

About three-quarter of the patients had problems of functional limitations at sports and about half of them have pain on walking at two weeks post injury. At sixth week post injury, about half of them were still having problem at sports and about 10% had pain on walking. Therefore it is important to inform patients of the expected time for recovery. This is often not communicated to the patients on discharge at our department, resulting in distressed patients and unnecessary further consultations.

The recovery of ankle sprain of moderate severity was worst among the 3 groups. This may be due to lack of rest in the initial period. Thus, we felt that adequate medical leave, up to one week may be needed to allow for rest and healing.

### ***(3) How many patients need to seek further care after being given care by our department and what are the reasons for seeking further care?***

About half of our patients who were not given advice on follow-up sought further consultation within the first six weeks after the injury. They were mainly for second opinion, pain relief and repeated ankle sprain. We hope to reduce this problem by implementing guidelines for treatment of ankle sprain in our department.

This audit gave us an idea of our weakness in treatment of ankle sprain in our department. It helped us to implement a guideline for better care of ankle sprain.

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