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A three-year follow-up on injuries sustained by cruise ship passengers and crew treated at the Orthopaedic and Traumatology Department at Dubrovnik County Hospital

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ABSTRACT

Dubrovnik is one of the most popular destinations in the world for cruise ships. Several cruise ship passengers and crew members who have suffered different injuries have been treated at our department.

This was a retrospective study to analyse injuries that occurred to crew members and passengers on cruise ships that docked in Dubrovnik over a three-year period from December 2010 to December 2013. During this period, a total of 370 patients suffered trauma that needed medical treatment. A total of 119 of these patients required hospitalisation and received medical help based on the nature of the trauma they suffered. The remaining 251 patients were treated at our outpatient clinic.

Female patients in this study were exposed to osteoporotic trauma. Male patients presented mostly with injuries sustained during physical activities or because of the nature of their job on board. The leading cause of trauma accidents in the present study was falls on the same level.

Introduction

Dubrovnik is the most popular tourist town in Croatia and one of the most visited cruise ship ports in the world. During 2013, 711 cruise ships arrived in Dubrovnik bringing with them a total of one million passengers (Fig. 1) An additional one million tourists visit Dubrovnik by other forms of transport (car, motorbike, bus and aeroplane) every year [1,2].

Injuries and accidents can happen anywhere, including on cruise ships and other so-called common-carriers. Injuries are one of the leading causes of death and disability in the world, and they are the leading cause of preventable death in travellers. The overall mortality rate is 83.7 per 100,000 people. Injuries account for six out of the 15 leading causes of death worldwide in the 15–44 years age group [3].

Injuries can occur to passengers and crew members while they are aboard cruise ships. Some injuries are serious, including injuries to the brain, hands, feet, shoulders, neck and back, and may take the form of fractures and burns.

There are plenty of opportunities for passengers to suffer slip and fall injuries aboard cruise ships, regardless of the strict preventive safety measures in place. Cruise ships have pools, restaurants and venues for dancing, and sometimes they have slippery decks. Injuries can happen while tourists are visiting towns or on other onshore excursions.

Crew members can also suffer injuries (Fig. 2). For example, kitchen, restaurant and bar staff may suffer stabbing injuries caused by knives and broken glass, and staff in the engine section may receive burn injuries caused by the high temperatures in their working environment.

Patients and methods

This was a retrospective study to analyse injuries that occurred to crew members and passengers on cruise ships that docked in Dubrovnik over a three-year period from December 2010 to December 2013 and for which the passengers and crew were hospitalised or treated in the outpatient clinic in our hospital. During this period, a total of 370 crew members and passengers suffered trauma that needed medical treatment. A total of 119 of these patients required hospitalisation and received medical help

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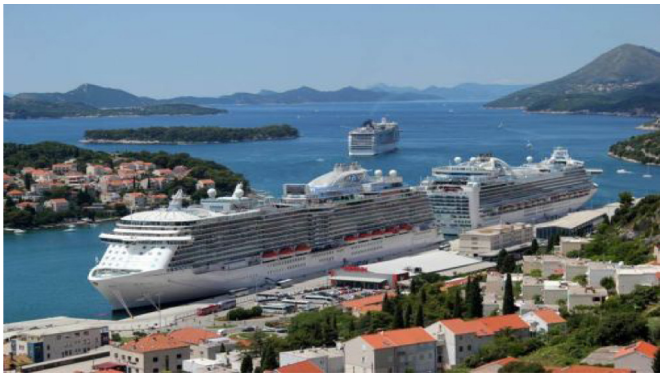

Fig. 1. Cruise ships in the Port of Dubrovnik.

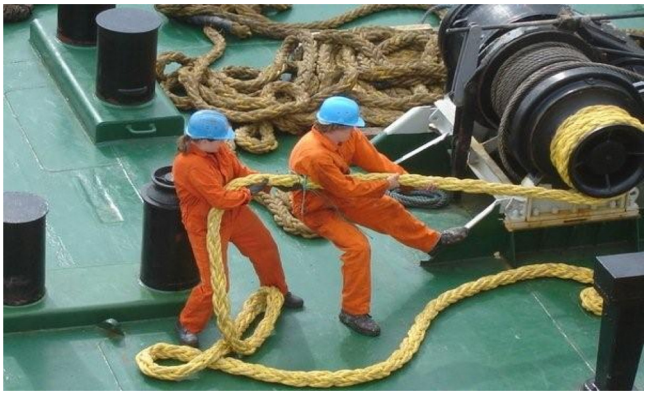

Fig. 2. Crew jobs onboard.

based on the nature of the trauma they suffered. The remaining 251 patients were treated at our outpatient clinic.

Inclusion criteria for the study were bone fracture and other injuries of the locomotory system (joint dislocation, joint distortion, tendon rupture). Patients were divided by gender (female, male), age (three groups: 0–19 years, 20–64 years, over 65 years) and by the type of trauma (two groups: bone fractures, other injuries).

Results

Tables 1 and 2 show the distribution of injuries in the study by gender, age and trauma among the patients who were hospitalised and those who attended the outpatient clinic.

Fractures of the distal radius were the most common fractures in the study patients (Table 2). Eight patients (five female, three male) in the 0 to 19 years group suffered this type of fracture, as did 52 patients (40 female, 12 male) in the 20 to 64 years group, and 17 patients (16 female, one male) in the over 65 years group. In most cases, the cause of trauma was slips on level surfaces or falls down stairs. The majority of these fractures were undisplaced or minimally displaced and were treated conservatively by manual reposition and plaster immobilisation.

Fractures and injuries of the hand (carpal, metacarpal and phalangeal fracture and tendon injuries) occurred in 39 patients, all of them male aged 20–64 years. The cause of these hand bone fractures was exclusively "falls on level surfaces". All the bone fractures were treated conservatively by manual reposition and plaster immobilisation. The eight patients with tendon injuries to the hand were crew members who had hand-demanding jobs (kitchen, engine); all of them were surgically treated by tendon suturing and hand immobilisation.

Humeral fractures occurred in 12 patients (7 female, 5 male) in the 20–64 years group and 7 patients (5 female, 2 male) in the over 65 years group. The cause of all the occurrences of this injury were falls on level surfaces and falls down stairs and steps. Six patients suffered fractures that could be treated by immobilisation, the other 13 required surgical intervention. Only one of these 13 patients was treated surgically; the other 12 decided to be treated surgically at home, so they were immobilised and transportation was arranged.

Shoulder-humeroscapular dislocation occurred in 30 patients: six patients (1 female, 5 male) in the 0–19 years group, and 24 patients (5 female, 19 male) in the 20–64 years group. Almost all of the shoulder-humeroscapular dislocations occurred on or around the swimming pool. The treatment for these dislocations was reduction by Kocher's method and immobilisation by Velpeau cast. Six patients aged 49–56 years were hospitalised for pain management after humeroscapular luxations.

Clavicle fractures occurred in 10 patients (1 female, 9 male), all of whom were in the 20–64 years group. They were all treated by immobilisation.

Osteoporotic fractures, such as hip fractures and vertebral fractures, were the most common reason for hospitalisation and surgical-based treatment in the study (Table 1). There were 26 patients with fractures of the proximal femur: 11 patients (all female; aged between 78 and 89 years) had a fracture in the trochanteric region and 15 patients (10 female, 5 male; aged between 66 and 85 years old) had a femoral neck fracture. Three patients who had fractures in the trochanteric femoral region were transported to their place of residence for therapy; the remaining eight patients underwent surgical procedure with intramedullary osteosynthesis and a short gamma-nail. Thirteen of the patients who suffered femoral neck fractures underwent surgical implantation of partial femoral endoprothesis. The remaining two

Table 1
Patients hospitalised in the period 2011–2013.

	2011					2012					2013				
Age	20–64		65<		Total	20–64		65<		Total	20–64		65<		Total
Gender	M	F	M	F		M	F	M	F		M	F	M	F	
Diagnosis															
Brain commotion	7	3	1	1	12	6	1	4	1	12	1	1	1	2	5
Spine fracture		1	1		2			1	2	3	1	1	1		3
Pubic bone fractures	1			2	3	1	1		1	3	1			2	3
Humeral fracture	3	2	1	1	7	1	2	1	2	6	1	3		2	6
Shoulder dislocation	2				2	1				1	2	1			3
Serial rib fractures	1				1	1	1	1		3	1		1		2
Femoral neck fracture			2	3	5			1	4	5			2	3	5
Fracture of the trochanteric region of the femur				4	4				3	3				4	4
Ankle fracture			2	4	6			1	5	6			1	3	4