

Analysis of 303 Road Traffic Accident Victims Seen Dead on Arrival at Emergency Room-Assir Central Hospital

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خلفية : حوادث الطرق أصبحت شائعة شيوعاً ملحوظاً كسبب للوفاة في المملكة العربية السعودية ، على الرغم من أنه لا توجد أي دراسة منشورة تبين ترتيب هذا المرض كسبب للوفاة .

هدف البحث : في هذه الدراسة نحاول تحديد ترتيب حوادث الطرق كسبب للوفاة ونريد أن نحدد أعمار مجموعات المصابين واستخراج بعض الاستنتاجات من نوعية الإصابات المختلفة .

طريقة البحث : على مدى أربعة سنوات ونصف كان ما مجموعة ٥٧٤ مريض (في حالة وفاة عند الوصول) قد فحص في قسم الطوارئ، بمستشفى عسير المركزي في أبها - المملكة العربية السعودية .

النتائج : ومن هؤلاء ٣٠٢ (٥٢.٨٪) كان ضحية حوادث الطرق ، وبتحليل هذه المجموعة كان نسبة الرجال إلى النساء ١:١٤ ، وكان السعوديين منهم ٦٩٪ ، ويتراوح أعمار المصابين من ٣ أشهر إلى ٨٥ سنة وبمعدل ٢٤.٢٥ سنة ، وكانت أعلى نسبة وفيات في مجموعة أعمار ما بين ٢١ - ٤٩ سنة ، وكانت أعلى نسبة استقبال حالات ما بين الساعة الثانية عشر ظهراً والساعة الثامنة عشر ، ويمثل الشهر العاشر (شوال) في التقويم الهجري أعلى نسبة وفيات . وهناك اختلاف بين فصول السنة بمعنوية احصائية (ح > ٠.٠٥) وكان فصل الصيف أعلاها . وبين الفحص الكلينيكي للضحايا أن إصابات الرأس والرقبة كانت من أعلى نسبة الإصابات تليها إصابات الصدر .

الاستنتاجات والتوصيات : يمكن استنتاج أن حوادث الطرق تعتبر من أهم الأسباب الرئيسية للوفاة للمصابين في أكثر فترات عمرهم إنتاجاً وحيوية ، وأوصت الدراسة بضرورة تطبيق نظام طبي للطوارئ قبل نقل المصابين إلى المستشفيات .

الكلمات المرجعية : حوادث الطرق ، المملكة العربية السعودية .

Background: Although Road Traffic Accident (RTA) is a noticeable common cause of death in Saudi Arabia, there is no published data showing the relative frequency of this disease as a cause of death.

Aim of the study : This study attempted to find out the relative frequency of RTA as a cause of death. Also, to identify age groups at risk as well as make some inferences from the different types of injuries seen.

Methodology : In a period of over a four and half years, 574 patients were seen dead on arrival at the Emergency Department of Assir Central Hospital, Abha, Saudi Arabia. Of these, 303 (52.8%) were victims of RTA.

Results : The 303 victims revealed a male to female ratio of 14:1, Saudi nationals of 69% and age range of 3 months - 85 years (mean = 34.25 years). The peak age group was between 21 and 49 years and the peak period of presentation at the Emergency Department

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was between 12:00 noon and 18:00 hours. The month of ten in Hegira Calendar represented the peak period; a significant ($P < 0.05$) seasonal variations was also seen, summer being the highest. Clinical assessment of the victims revealed that head and neck injuries were the commonest followed by chest injuries.

Conclusion : RTA is the primary cause of death among dead on arrival cases affecting the most active and productive age group. The study recommended the implementation of pre-hospital emergency medical system.

Key Words : Road Traffic Accident, Saudi Arabia.

INTRODUCTION

Trauma, a preventable condition, is the leading cause of death in the first four decades of life.¹ Trauma care starts from the first few minutes at the scene after an accident and continues on the way to the hospital where more definitive care is given. Mortality in the first hour depends on several factors among which are trauma severity and pre-hospital care. The objectives of this study are:

1. To determine the rank of road traffic accident (RTA) among other causes in patients who were already dead on arrival (DOA) at the Emergency Department (ED) in our region.
2. To determine the characteristics of populations involved in RTA and seen as DOA.
3. To determine the type of injuries in the DOA victims.

The information derived from this study, hopefully, will help health personnel to establish a system by which the injured are managed properly from the time of accident till arrival in hospital. In addition, it will advise the law enforcement agency and legislators in particular in enacting and enforcing laws that will lead to the prevention of RTA and/or reduction of the mortality and morbidity rates.

MATERIAL AND METHODS

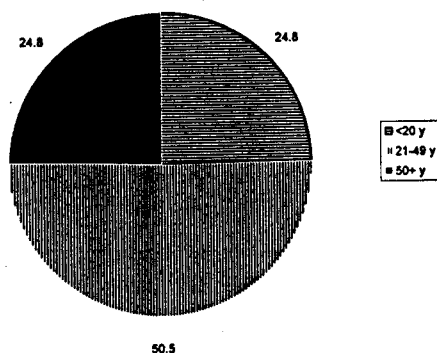
The data of all RTA victims who were dead on arrival at the Emergency Department (ED) of Assir Central Hospital (ACH), Abha, Saudi Arabia, between the months of 02-1410 (August 1989) and 12, 1414 (May 1994) were obtained from the medical records of the emergency room. The nationality, sex, and age of the victims, time and

month of arrival in the ED and types of injuries clinically encountered, were analyzed. The dates used in this study are according to both Hegira and Gregorian Calendars, since the Hegira Calendar is the standard used in file keeping at the ACH, Abha, and it also a good indicator of the public holidays in Saudi Arabia, while, the Gregorian Calendar is a better guide to the seasons. Chi-square at 5% level of significance was used.

RESULTS

During the four and half-year period, 574 patients were DOA in the ED; 303 (53%) of them were victims of RTA. Of these 303 victims, 283 (93.4%) were males and 20 (6.6%) females giving a male to female ratio of 14:1. Two hundred and nine (209; 69%) patients were Saudi nationals. The age range was 3 months to 85 years, with a mean age of 34.25 years. The peak age was between the third and fifth decades of life (21-49 years) (Fig. 1). The commonest period of presentation at the ED, regardless of the time of accidents, was

Fig. 1
Age group distribution of DOA victims due to RTA



between 12:00 and 18:00 hours (116 patients; 38.3%) followed by 18:00 hours to 24:00 hours (88 patients; 29%) Fig. 2. The distribution of patients seen in various months of the Hegira year is shown in Fig. 3, the 10th month being the highest. The year of 1413 Hegira had the highest number of the

RTA DOA victims as shown in Fig. 4. The summer season in the Gregorian calendar has a significant rise of the RTA DOA compared to the winter season ($p < 0.05$) (Fig. 5). A total of 879 injuries were clinically located in different parts of the body. The average number of injuries sustained by

Fig. 2
Distribution of time of arrival of D O A victims due to R T A

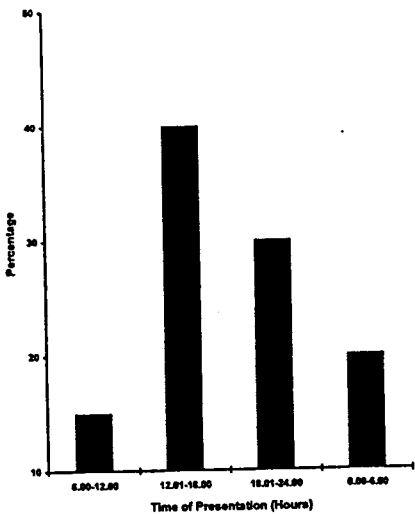


Fig. 4
Year distribution of D O A victims due to R T A

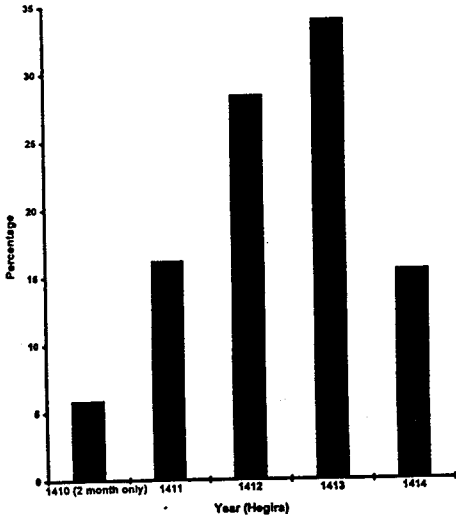


Fig (3)
Hegira month distribution of D O A victims due to R T A

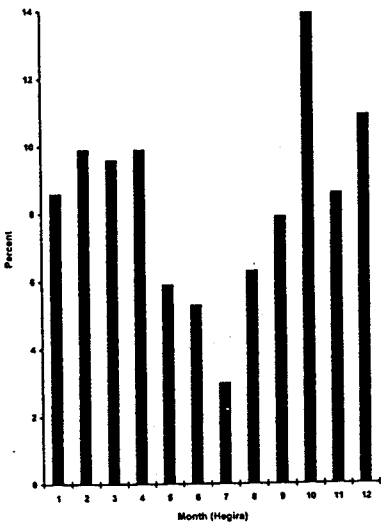
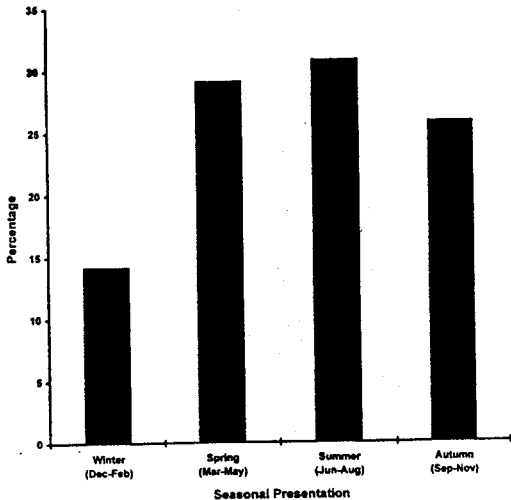


Fig (5)
Seasonal Presentation of Victims of D O A due to R T A



every RTA DOA patient was 2.9. Head and neck injuries (exclusive of skull fractures) accounted for 45% of the injuries followed by chest injuries (39%). Thirty-five percent (35%) of the victims had skull fractures (Table 1). Brain matter extruding from the skull was seen in 20.3% of the victims.

DISCUSSION

This retrospective study of RTA DOA victims has certain limitations. The diagnoses were all clinically made without the benefit of certainty of pathology from autopsy examination since autopsies are not usually performed in the Kingdom of Saudi Arabia². RTA is a major cause of instant death in this region since it consists of more than half of the cases brought DOA into our ED.

The predominance of male victims (93%) is mainly due to the exposure and the activity of the males; females do not drive in Saudi Arabia. In a study from the United States of America (USA) males account for 72% of accident related deaths³. There is a large number of Saudis in this study because the population is mainly Saudi in this part of Saudi Arabia. The population of Saudi Arabia is about 16.9 million, 12.3 million (72.7%) of whom are Saudis and 4.6 million (27.3%) are Non-Saudis⁴. Assir region, in which this study was conducted, has a population of about one million. Although it has long been recognized that the

mortality rate from injury is much higher in the elderly⁵⁻⁶, elderly people are much less exposed to the types of trauma that are fatal to younger people. The highest incidence of trauma occurs in the most active and productive age group (21 -49 years) and lower in the older age group (Fig. 1),

The maximum number of cases were seen during the daylight hours between 12:00 and 18:00 hours (38%). This includes the rush hour period when people are returning home from work or travelling to neighboring towns and villages. This also represents the period during which people are engaged in recreational activities. Seasonal variation was also noticed in this study. There is a significant correlation with the summer holidays and public holidays. The population in this part of the country almost doubles when many tourists flock to this region during the summer months because of its mild weather. The Assir region is situated at a high altitude of about 2200 meters above sea level. The fog in this area which usually affects visibility, however, was not found to be a significant factor in this study since the incidence of RTA DOA victims during the winter period is about the lowest. The year 1413 had the maximum number of RTA DOA victims. There seems to be no clear explanation for this and further investigation into this is therefore required.

Table 1
TYPE & RATE OF INJURIES IN 303 (N) PATIENTS OF RTA

TYPE OF INJURIES	No. OF INJURIES	PERCENTAGE (%)
Head and Neck	136	45
Thorax	117	39
Skull Fracture	105	35
Tibia & Fibula Fracture	98	32
Face	92	30
Major External Laceration	90	30
Femure	79	26
Radius + Ulna	62	20
Abdomen	40	13
Humorous	38	13
Pelvis	22	7

All the victims were polytraumatized, and the types of injuries were severe. The majority of victims had a combination of severe head, neck, chest and lower extremities injuries typical of driving without a harness on coupled with high speeds⁷. The enormity of the impact of trauma can be estimated from the skull fracture (105; 35%), with brain matter extruding from the skull in 61 (20.3%) patients. There is documentation in the international studies of the fact restraining that devices plays a significant role in the reduction in mortality of drivers and passengers⁸⁻¹⁰. The decrease in mortality has been estimated to be as much as 43%¹¹. Shawan et al showed in a local study on the attitude to the wearing of seat belts found that the commonest reason for not wearing a seat belt was that of complacency and 90% of the people interviewed thought that a legislation on seat belts would be useful¹². A similar study by Bener et al in the United Arab Emirate had similar results¹³.

CONCLUSION

Road Traffic Accident is the first major cause of death among Dead on Arrival cases affecting the most active and productive age group; most of the accidents occur during daylight hours and correlate well with public and summer holidays. Types of injury indicate high speeds and unrestrained occupants. Although we cannot prevent all deaths from Road Traffic Accident, we can reduce the number of deaths, since it was noted in previous studies that 20% - 30% of trauma related deaths are preventable.¹⁴ We, therefore, strongly recommend the following:

1. The introduction of legislation for the mandatory fitting and wearing of seat-belts, and the intensification of the current educational program and law enforcement especially during public and summer holidays.

2. The implementation of pre-hospital emergency medical system.¹⁵⁻¹⁶ This can be done by introducing the well established pre-hospital life support programs¹⁷, like Emergency Medical Technician- Ambulance (EMT-A),¹⁸ Emergency Medical Technician - Intermediate (EMT-I)¹⁹, Emergency Medical Technician - Paramedic

(EMT-P)²⁰.

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