

Original Article

A 5 YEARS RETROSPECTIVE STUDY ON POST-MORTEM CASES INVOLVING MOTOR VEHICLE ACCIDENTS (MVA) IN HOSPITAL PULAU PINANG

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ABSTRACT

Motor Vehicle Accidents (MVA) is one of the common cases that was brought to Forensic Department for post-mortem examination. Injuries due to MVA had been very serious and fatal. Based on this, a retrospective study was conducted on post-mortem cases involving MVA cases starting from 1st January 2008 until 31st December 2012 at Jabatan Perubatan Forensik, Hospital Pulau Pinang. This study was conducted to determine the demographic data with regards of gender, race, age, and common cause of death involving MVA victims. A total of 604 cases obtained from post-mortem record books. The result showed that males victims (85.3%) were higher compared to female (14.7%). Categorization based on race indicates that Chinese (45.4%) dominated the other races followed by Malay (32.9%), Indian (15.4%), and others (6.3%). Those aged between 21-30 years (20.4%) had the highest incidence among other age groups. The most common cause of death due to MVA was head injury (56.6%). In conclusion, post-mortem examination on dead body due to MVA should not be underestimated. Proper attentions must be taken to prevent fatal injuries among MVA victims.

Key Words: *post-mortem, motor vehicle accidents*

INTRODUCTION

Motor Vehicle Accidents (MVA) is one of the common cases was brought to Forensic Department for post-mortem examination. Each year, many victims have died due to accidents especially during festival seasons. The victims are not only Malaysians, but also include foreigners. According to Malaysian Institute of Road Traffic Research (MIROS) [1], there were more than 400,000 of road accidents and more than 6,000 death in the year 2012 only. There was an increasing pattern of death due to road accidents in Malaysia even though there were many campaigns conducted throughout the year. They also predicted that number of fatalities in 2020 will be up to 10,716 deaths. More efforts are needed and effective interventions should be made in order to reduce death among MVA victims. Therefore, a study was conducted on post-mortem cases involving MVA in Hospital Pulau Pinang.

MATERIAL AND METHOD

A retrospective study of 5-years duration from 2008 until 2012 was conducted in Jabatan Perubatan Forensik, Hospital

Pulau Pinang. The data was collected from post-mortem record books. Inclusive criteria were including Motor Vehicle Accidents (MVA) cases and only those who were brought in dead and examined in Jabatan Perubatan Forensik, Hospital Pulau Pinang.

Data collected were including gender, race, age, and cause of deaths among MVA cases and analysis was done using SPSS 20.0.

RESULT

Results showed that post-mortem examination among Motor Vehicle Accidents (MVA) victims in the year 2010 (22.4%) was the highest compared to other years (Figure 1). In terms of gender, males (85.3%) predominantly higher compared to females (14.7%) (Figure 2). Chinese (45.4%) was the highest reported post-mortem cases due to MVA in terms of race followed by Malay (32.9%), Indians (15.4%), and others (6.3%) (Figure 3). The most common age group was between 21-30 years (20.4%) (Figure 4). Head injury (56.6%) was the highest cause of death due to MVA (Figure 5).

Year	Frequency	Percentage (%)
2008	105	17.4
2009	118	19.5
2010	135	22.4
2011	116	19.2
2012	130	21.5
Total	604	100.0

Figure 1: Distribution of Post-Mortem Cases by Duration of 5 Years (2008-2012)

Gender	Year of Death					Total
	2008	2009	2010	2011	2012	
Male	93	96	114	102	110	515 (85.3%)
Female	12	22	21	14	20	89 (14.7%)
Total	105	118	135	116	130	604

Figure 2: Distribution of Post-Mortem Cases of Motor Vehicle Accidents by Gender According to Year

Race	Year of Death					Total
	2008	2009	2010	2011	2012	
Malay	32	39	50	38	40	199 (32.9%)
Chinese	55	50	53	55	61	274 (45.4%)
Indian	15	19	20	17	22	93 (15.4%)
Others	3	10	12	6	7	38 (6.3%)
Total	105	118	135	116	130	604

Figure 3: Distribution of Post-Mortem Cases of Motor Vehicle Accidents by Race According to Year

Age	Year of Death					Total
	2008	2009	2010	2011	2012	
< 1	0	1	1	0	0	2 (0.3%)
1-10	0	1	4	1	1	7 (1.2%)
11-20	14	21	28	24	25	112 (18.5%)
21-30	16	31	24	22	30	123 (20.4%)
31-40	16	14	14	8	14	66 (10.9%)
41-50	17	7	12	14	12	62 (10.3%)
51-60	17	14	20	16	20	87 (14.4%)
61-70	14	15	19	23	15	86 (14.2%)
71-80	11	12	9	7	10	49 (8.1%)
81-90	0	2	4	1	3	10 (1.7%)
Total	105	118	135	116	130	604

Figure 4: Distribution of Post-Mortem Cases of Motor Vehicle Accidents by Age Groups According to Year

Cause of Death	Year of Death					Total
	2008	2009	2010	2011	2012	
Head Injury	64	59	74	73	74	344 (56.6%)
Massive Bleeding	1	0	1	3	1	6 (1.0%)
Multiple Injuries	30	48	45	22	35	180 (29.8%)
Crashed injuries to thorax	5	5	6	9	10	35 (5.8%)
Abdominal Injury	4	3	7	7	5	26 (4.3%)
Neck Injury	1	3	0	2	2	8 (1.3%)
Others	0	0	2	0	3	5 (0.8%)
Total	105	118	135	116	130	604

Figure 5. Distribution of Post-Mortem Cases of Motor Vehicle Accidents by Cause of Death According to Year

DISCUSSION

In this study, male and female ratio among the victims was 4 : 1. More than 80% of males died due to Motor Vehicle Accidents (MVA) during the 5 years (2008-2012) duration. The ratio was in conformity with the previous study conducted in India where there was a marked male preponderance 88.77% and another study conducted in University Malaya Medical Center (UMMC) showed that 57.6% male involved in the fatal MVA [2, 3, 4]. According to Malaysia Labour Force Survey Report 2012 [5], in Pulau Pinang there was 80.9% of working men and 56.5% women. The majority was men could be due to men as the predominantly the earning member of the family. They use road frequently to work thus put them in a higher risk of getting involved in MVA.

The highest post-mortem cases involving MVA was observed among the age group 21-30 (20.4%) followed by 11-20 years (18.5%) and the lowest 0-1 year old (0.3%). Similar age distribution of MVA victims has also been reported in several studies where the age group 20-30 had the highest percentage which is 44.19%; and in Malaysia, those age group 21-50 years account for 59% [5, 7-10]. Teens and young adults are more likely than older drivers to underestimate dangerous situations or not be able to recognize hazardous situations. Factors such as speeding, recklessness, beating red lights, overtaking and indiscriminate lane change coupled with the fact that motorcyclists are exposed make them more vulnerable to accidents.

The race with the highest cases of post-mortem examination involving MVA was Chinese with percentage of 45.4% of all cases. This was followed by Malays (32.9%) and Indians (15.4%) and others (6.3%). According to Department of Statistics Malaysia, Chinese accounts for 41.5% of total Pulau Pinang population followed by Malay (40.9%), Indians (9.9%), and others (0.3%) [11, 12]. Therefore there are higher chances of the victims involved in the MVA in Pulau Pinang to be

Chinese, followed by Malays and Indians. However another study conducted in University Malaya Medical Centre (UMMC) revealed that Malay involved in MVA accounts for 60% followed by Indians (21%), Chinese (16%) and other ethnic groups (3%) [5]. The result was different due to population and proportion in races of Pulau Pinang and Kuala Lumpur.

The results showed that there was a marked preponderance of younger age group of Chinese male in the MVA in Pulau Pinang during the five years duration. In the list of cause of death (Figure 5), it can be seen that the most common cause of death in motor vehicle accidents and brought into Hospital Pulau Pinang was due to head injury with a total of 342 cases out of 604 cases. This was followed by multiple injuries (180), crashed injuries to thorax (35), abdominal injury (26), neck injury (8), massive bleeding (6), others (5) and skull fracture (2).

Department of Neurosurgery, Hospital Sultanah Aminah, Johor Bahru stated that severe traumatic brain injury is one of the major cause of death in Malaysia [13]. Head injury is the most common injury to occur towards motorcyclist in motor vehicle accident, in which a study done stated that open wounds and superficial injury to the head make up (69.3%) of the cases followed by upper extremity (27%) and lower extremity (24%) [14]. Another study [15] also shown that there were few differences in types of injuries sustained by riders and pillions though riders had a significantly lower risk of crush injuries of the lower extremity than pillions and overall, (11%) motorcyclist users died, of which (42.8%) died before reaching the hospital [16].

Traumatic brain injury is also the leading cause of death in United States of America based on the statistics from Brain Trauma Foundation of the USA [17]. Brain is the control centre of the body, if there is injury to the brain or the blood supply to the brain is cut off, death can occur rapidly. Probably, this was the reason of head injury being the highest cause of death in motor vehicle accidents in Pulau Pinang.

The number of MVA cases gradually increased from 2008 to 2010 but dipped slightly in 2011. In 2012, the numbers continued to rise again.

There were several limitations about this study. Firstly, this study did not represent the data for the whole Malaysia. This study may only represent Pulau Pinang state. Secondly, although there were many recorded road fatalities in Malaysia, but post mortem was not conducted for all of the cases, especially at east coast of Peninsular Malaysia. This may be, due to religion and culture restrictions. Therefore, it may not represent the real scenario in Malaysia. Besides that, we were not able to show data about vehicle that commonly involved in MVA due to time constraints. It is hoped that this research will be continued and improvised. In the future, it would be great if this kind of research can be conducted all over Malaysia. According to MIROS, they predicted in the year 2020 the number road fatalities will be up to more than 10,000 deaths. Hopefully this research can alert the public to reduce the death rate due to MVA.

CONCLUSION

In conclusion, post-mortem examinations revealed that common cause of death due to Motor Vehicle Accidents (MVA) in Pulau Pinang was head injury with age group of 21-30 years old as the most common age. MVA cases were also seen more in men and Chinese. Thus, road safety education and regulation should be more thoroughly reinforced.

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