ACİL TIPTA ŞİDDET İLE İLGİLİ ADLİ OLGULAR TRAFİK KAZALARININ ÖNÜNE Mİ GEÇİYOR?

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ÖZET

Amaç:

Her yıl bir milyondan fazla insan kendine zarar verme, başkası tarafından uygulanan şiddet ya da toplu şiddet uygulamalarıyla hayatlarını kaybetmekte veya sakat kalmaktadır. Daha önce acil servislerde yapılan çalışmaların tümünde, motorlu taşıt kazalarının (MTK) en büyük adli vaka grubunu oluşturduğu gösterilmişti. Bu çalışmada acil servislerdeki şiddet ile ilgili adli vakaların, MTK vakalarından daha fazla olduğunu ve acil servislerde daha fazla iş yüküne neden olduğunu göstermek amaçlanmıştır.

Yöntemler:

Bu çalışma 1 Ocak 2011 - 31 Aralık 2012 tarihleri arasında hastanemiz acil servisindeki kayıtlar incelenerek retrospektif olarak yapıldı. Eş zamanlı olarak literatürü analiz edildi ve Türkiye'nin farklı bölgelerinde toplam 54000 olgu içeren 7 ayrı çalışmanın verileri karşılaştırıldı. Adli vakalar "Motorlu taşıt kazaları", "Şiddet vakaları" ve "Diğer" olarak üç grup altında incelendi. Hastaneye başvuran tüm adli vakalar çalışmaya dahil edildi. Veriler toplanırken hastane ve polis resmi kayıtları kullanıldı.

Bulgular:

Toplam 3838 adli olgu incelendi. Vakaların %70,3'ü erkek, %29,7'si kadındı. Ortalama yaş 32,5±15,52 (min. 0, max. 94) bulundu. Vakaların çoğunu genç erkekler oluşturuyordu. Şiddet %45,6 ile ilk sırada yer alırken (darp %29, bıçaklanma %7, ilaç zehirlenmesi %8, ateşli silah %1, cinsel saldırı %0,1), motorlu taşıt kazaları % 37,9 ile ikinci sırada ve "diğer" grup %16,5 ile üçüncü sıradaydı.

Sonuç:

Şiddet, 15-44 yaş arasındaki insanlar için dünyada en önde gelen ölüm sebeplerindendir. Acil servislere başvuran adli vakalarda motorlu taşıt kazaları daha çok mortalite ve morbiditeye sahip olmasına rağmen, şiddet ve şiddetten kaynaklanan adli vakalar daha sık görülmektedir. Bunun yanında şiddete bağlı adli vakaların acil servislerde çok daha fazla iş yüküne ve ekonomik kayba sebep olduğu gerçeği de dikkatleri çekmelidir.

Anahtar kelimeler: adli tıp, acil vakalar, motorlu taşıt kazaları, şiddet

ARE VIOLENCE RELATED CASES OVERTAKING MOTOR VEHICLE ACCIDENTS IN FORENSIC EMERGENCY MEDICINE?

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ABSTRACT

Objective:

Each year, more than a million people lose their lives, and many become disabled, as a result of self-inflicted, interpersonal or collective violence. In all the previous studies conducted in the emergency departments, it has been shown that motor vehicle accidents (MVA) compose the largest forensic case group. In this study, we aimed to show that violence related cases exceed the MVA cases and cause more work burden on the emergency physicians.

Methods

This study was conducted retrospectively using the hospital records between January, 2011 and December, 2012. At the same time we analyzed literature and compared seven different studies involving 54000 cases from different parts of Turkiye. We evaluated the forensic cases under three categories as "MVA", "Violence" and "Others". All forensic cases who applied to the emergency department were included in the study. The data was collected from hospital and official police records

Results:

A total of 3838 medical legal cases were examined, 70.3% were male 29.7% were female. Mean age was found as 32.5 ± 15.52 (min 0, max 94). The majority of the patients were young men: Violence with 45.6% accounted for the largest group of forensic cases [assault 29.1%, stabbing 7.4%, drug intoxications 8.1%, and gunshot 1.0%, sexual assault 0.1%] followed by MVA, 37.9% and "Others" 16.5%.

Conclusion:

Violence is among the leading causes of death worldwide for people aged 15–44 years. Although MVA results in higher morbidity and mortality in forensic emergency medicine, Violence and violence related cases are much more frequent. Additionally attention should be drawn to the fact that violence related cases cause more work burden and economic losses in the emergency department.

Key words: *forensic medicine, emergency cases, motor vehicle accidents, violence*

INTRODUCTION

Each year, more than a million people lose their lives, and many more suffer non-fatal injuries, as a result of self-inflicted, interpersonal or collective violence. Previous studies on forensic emergency cases in Turkiye and other parts of the world have shown motor vehicle accidents (MVA) to be the largest single group. In this study, we aimed to prove that "Violence" is overtaking MVA and causing more burdens on the emergency physicians in Turkiye.

In 1996, the Forty-Ninth World Health Assembly adopted Resolution WHA49.25, declaring violence a major and growing public health problem across the world. In this resolution, the Assembly drew attention to the serious consequences of violence – both in the short-term and the long-term – for individuals, families, communities and countries, and stressed the damaging effects of violence on health care services. There are many possible ways to define violence. The World Health Organization defines violence as: "The intentional use of physical force or power, threatened or actual, against oneself, another person, or against a group or community that either results in or has a high likelihood of resulting in injury, death, psychological harm, maldevelopment or deprivation" (1).

According to this definition gunshot wounds, suicide attempts, stabbing, rape and physical assaults all fall under this group. In all the studies done earlier (2-15), motor vehicle accidents (MVA) have been shown to be the largest single group in forensic cases. In this study, we aimed to prove that the proportion of human violence i.e. assaults, suicide attempts, rape, gunshots and stabbings when added together exceeded the MVA cases. We conducted a retrospective investigation of 3.838 emergency forensic cases that were seen at our hospital and investigated similar articles in the literature and thus wanted to share our experiences on this topic with literature review.

MATERIAL AND METHOD

This is a retrospective study involving 3838 forensic cases and was conducted between January, 2011 and December 2012 in a tertiary hospital in Istanbul. We then analyzed forensic cases under three categories. We used the WHO definition of violence as our reference point. All cases like physical assault, suicide attempts (drug intoxications), stab wounds, gunshot wounds, and sexual assault were grouped as "Violence" while the second group consisted of all MVA, we named the remaining as "Others". Inclusion criteria were all forensic cases that were treated at our emergency department. The data were collected from hospital and official police reports. Also seven more studies on emergency forensic cases involving over 54000 cases that were conducted in different regions of the country by different institutions were analyzed in similar fashion and grouped as "Violence" and "MVA" and "Others" to support our argument.

Stastistical analysis

For stastistical analysis we used NCSS (NumberCruncher Statistical System) 2007&PASS (Power Analysis and Sample Size) 2008 Statistical Software (NCSS LLC, Kaysville, Utah, USA) program. Oneway Anova test was used for descriptive data analysis and Tukey HDS test was used to identify the group that caused the differences. Pearson's chi-square test was used for quality analysis. The results were evaluated with 95% confidence interval (p<0.05).

RESULTS

Between January, 2011 and December, 2012, a total of 3838 medical-legal cases were examined, 70.3% were male (n=2697), 29.7% were female (n=1141). Violence with 45.6% (n=1750) i.e. [assault 29.1% (n=1116), stabbing 7.4% (n=283) suicide attempts (drug intoxications) 8.0% (n=309), gunshot 1.0% (n=38) sexual assault 0.1% (n=4)] accounted for the largest group of forensic cases followed by traffic accidents (MVA) 37.9% (n=1453), industrial accident 10.5% (n=403), falls 3.3% (n=127), poisoning 1.8% (n=71) (Table 1).

The mean age of the "Violence" group was 30.78±13.60 years, MVA was 33.65±17.95 years and the men age for the "Others" group was 34.66±13.96 years. The mean age difference among the three groups was found to be statistically significant (p=0.001; p<0.01). The mean age of the "Violence" group was statistically much lower compared to the other two groups (p=0.001; p=0.001; p<0.01), but there was no statistical difference between the mean age of the MVA and "Others" group (p=0.352; p>0.05). The majority of the patients in both the "Violence" group and the MVA group were of young age: with 32.2% the largest group being 20-29 age group (n=1234), followed by 30-39 age group 23.4% (n=903) and 10-19 age group constituting 13.4% (n=513).

The mean patient number per month was found as 319.8±74.5. There were more forensic cases in the summer period. While August was the month when these cases were seen most, 10% (n=382) January with 6.1% (n=233) was the month when they were seen least (Table 2).

Table 1: Case distributions according to diagnosis

Cases	n	%
Violence	1750	45.6
Physical assault	1116	29.1
Stabbing	283	7.4
Gunshot	38	1.0
Sexual assault	4	0.1
Suicide attempts	309	8.0
MVA	1453	37.9
Others	635	16.5
Industrial accidents	403	10.5
Falls	127	3.3
Poisoning	71	1.8
Burns	8	0.2
Dog bites	22	0.6
Suspicious deaths	4	0.1

Gender evaluation

For the patients in the "Violence" group 68.3% (n=1195) were male and 31.7% (n=555) were female. In the MVA group 66.6% (n=967) were male while 33.4% (n=486) were female. In the "Others" group male were 84.3% (n=535) and female were 15.7% (n=100). Considering the gender distribution, the differences were statistically highly significant (p=0.001; p<0.01). Though there was no statistically significant difference between the "Violence" group and MVA group in terms of the gender distribution (p=0.297; p>0.05), but the we can deduce that males were the main gender in both the "Violence" and the MVA group; 68.3% (n=1195) and 66.6% (n=967) respectively.

Evaluation of the final destination of the patients showed a statistically significant difference (p=0.001; p<0.01). The ratio of MVA and "Violence" patients treated and discharged from the emergency department (outpatients) was significantly high (81.5% and 86.4% respectively) while the ratio of "Others" patients admitted to the wards was much higher (Table 4). This shows that the burden caused by these two groups of patients on the health sector is mainly concentrated in the emergency department rather than the hospital as whole.

Table 2: Case types and distribution analysis by age and months

		Cases				p
		Total (n<3838)	Violence (n<1750)	MVA (n<1453)	Others (n<635)	
		Mean±SD	Mean±SD	Mean±SD	Mean±SD	
Age (years)		**32.51±15.53**	30.78±13.60	33.65±17.95	34.66±13.96	[a]**0.001****
		n (%)	n (%)	n (%)	n (%)	
Gender	Male	2697 (70.3)	1195 (68.3)	967 (66.6)	535 (84.3)	[b]**0.001****
	Female	1141 (29.7)	555 (31.7)	486 (33.4)	100 (15.7)	
Age groups	0-9 y	157 (4.1)	53 (3.0)	91 (6.3)	13 (2.0)	
	10-19 y	513 (13.4)	273 (15.6)	190 (13.1)	50 (7.9)	
	20-29 y	**1234 (32.2)**	**613 (35.0)**	**432 (29.7)**	**189 (29.8)**	
	30-39 y	903 (23.5)	432 (24.7)	296 (20.4)	175 (27.6)	
	40-49 y	496 (12.9)	194 (11.1)	179 (12.3)	123 (19.4)	
	50-59 y	313 (8.2)	131 (7.5)	128 (8.8)	54 (8.5)	
	60-69 y	112 (2.9)	33 (1.9)	59 (4.1)	20 (3.1)	
	70-79 y	64 (1.7)	13 (0.7)	46 (3.2)	5 (0.8)	
	80-89 y	38 (1.0)	6 (0.3)	28 (1.9)	4 (0.6)	
	90-100 y	8 (0.2)	2 (0.1)	4 (0.3)	2 (0.3)	
Months	January	233 (6.1)	116 (6.6)	78 (5.4)	39 (6.1)	
	February	244 (6.4)	101 (5.8)	104 (7.2)	39 (6.1)	
	March	270 (7.0)	126 (7.2)	92 (6.3)	52 (8.2)	
	April	296 (7.7)	153 (8.7)	93 (6.4)	50 (7.9)	
	May	371 (9.7)	177 (10.1)	148 (10.2)	46 (7.2)	
	June	358 (9.3)	169 (9.7)	136 (9.4)	53 (8.3)	
	July	351 (9.1)	169 (9.7)	105 (7.2)	77 (12.1)	
	August	**382 (10.0)**	**137 (7.8)**	**171 (11.8)**	**74 (11.7)**	
	September	363 (9.5)	163 (9.3)	122 (8.4)	78 (12.3)	
	October	352 (9.2)	160 (9.1)	148 (10.2)	44 (6.9)	
	November	286 (7.5)	121 (6.9)	129 (8.9)	36 (5.7)	
	December	332 (8.7)	158 (9.0)	127 (8.7)	47 (7.4)	

*[a]OnewayAnova Test [b]Pearson Chi-square Test **p<0.01*

Table 3: Evaluation of the final destination of the patients

	Cases				[b]p
	Violence n (%)	MVA n (%)	Others n (%)	Total n (%)	
Admitted to wards	243 (13.9)	148 (10.2)	100 (15.7)	491 (12.8)	0.001**
Reffered to other centers	51 (2.9)	21 (1.4)	27 (4.3)	99 (2.6)	
Quit without treatment	28 (1.6)	18 (1.2)	4 (0.6)	50 (1.3)	
Exitus	2 (0.1)	10 (0.7)	6 (0.9)	18 (0.5)	
Treated and discharged (Outpatient)	1426 (81.5)	1256 (86.4)	498 (78.4)	3180 (82.9)	

*[b]Pearson Chi-square Test **p<0,01*

DISCUSSION

Our institution which is a tertiary hospital deals with about 200000 patients per year of which medical-legal cases account for about 2%. Emergency physicians routinely evaluate the victims of MVA, gunshots, stab wounds, physical assault, domestic violence, sexual assault, elder abuse, suspicious deaths, child abuse, occupational injuries, suicide attempts (drug intoxication), terrorist attacks, burns, electrical-related injuries, and poisonings in both adult and pediatric populations (2, 9-15). Moreover it is commonly considered a ''law and order'' issue, in which the role of health professionals is limited to dealing with the consequences.

In our study and other several studies conducted in different regions of the country (2-15), we found that the burden caused by violence on the emergency medicine field has been shown to be much greater compared to the burden caused by MVA, (39.06/38.4). Although precise estimates are difficult to obtain, the cost of violence translates into billions of US dollars in annual health care expenditures worldwide, and billions more for national economies in terms of days lost from work, law enforcement and lost investment (16). Weapons play a large part in inflicting violent injury. Violence involving firearms is a significant problem in the world.

Brennan et al. (17) conducted a six-year period study in England, and 24660 patients were reported as assault with a total of 31315 injuries. Men accounted for 74.5% of the sample (68.3% in our study). Whereas 21.5% of victims were inflicted with a weapon, 11% of all injuries were inflicted with a sharp object and 10.5% with a blunt object. In another study conducted by Michael R et al (18), in the United States among the estimated 1.4 million hospitals emergency department patients treated in 1994 for nonfatal injuries sustained in intentional or possibly intentional violence 94% were injured during an assault, 2% were injured during a robbery and 5% of them by an offender in a rape or sexual assault (19).

A substantial proportion of the costs of violence result from its impact on victim's health and the burden it places on health institutions (20). This gives the health sector both a special interest in prevention and a key role to play. The Surgeon General of the United States of America was the first to spell this out clearly, in 1979, in a report entitled Healthy People. The report stated that the consequences of violent behavior could not be ignored in the effort to improve the nation's health, and made tackling the roots of violence a top priority for the health community (21).

In all the studies done previously on forensic emergency cases (2-15), the emphasis has always been directed to the MVA. Although MVA looks to be the largest single group, in our study we found that violence and violence

Table 4: Studies conducted in different parts of the country showing MVA/violence ratio.

Institution	Study year	Total cases	MVA	Physical assault	Sexual assault	Suicide attempts	Stab wounds	Gunshot wounds	Total (violence)	MVA/Violence
Demircan et al	2000-2005	13823	43.84	19.04	0.60	17.10	3.53	0.97	41.24	43.84/41.24
Gazi University	2003	1218	44.30	16.50	0.70	20.70	4.10	0.70	42.70	44.30/42.70
Cumhuriyet University	2006	1296	30.90	26.40	0.50	6.80	18.00	4.70	56.40	30.90/56.4
S. Demirel University	1999-2001	20414	53.85	15.14	0.20	2.50	3.12	2.39	23.35	53.85/23.35
Uludağ University	2003	10984	24.04	20.29	0.40	2.95	3.59	1.55	28.78	24.04/28.78
Numune Hospital	2011	3838	37.90	29.10	0.10	8.10	7.40	1.00	45.70	37.90/45.70
Gata Military Hospital	1995-2002	720	43.60	28.00	1.70	-	6.60	12.50	48.80	43.60/48.80
Cukorova University	2010	5870	27.30	17.60	-	0.10	6.30	1.50	25.50	27.30/25.50
Total		54325	38.44						39.06	38.44/39.06

related incidents (as defined by the WHO), can be seen to be more frequent, 39.06 vs. 38.44 respectively (Table 4).

In 7 different studies (2-8), a total of 54325 patients were evaluated and of these 39.06% were found to be violence related cases while 38.44% were found to MVA related cases. In some regions like Sivas the ratio of violence related cases exceeds over 50% of all the forensic patients. This can be attributed to the level of social and economic developments. Also from these results the highest level of gunshot wounds was seen in the GATA Military Hospital (12.5%) and this can be well understood since the military hospitals usually deal with weapon related injuries. Among all the violence related cases human physical assault was seen to take the largest portion (29.10%). We can also deduce from this research that physical assault is mainly rampant in the metropolis cities like Istanbul where the populations are high with people of diverse behavior as shown in Table 4.

In 1996, the Forty-Ninth World Health Assembly adopted Resolution WHA 49.25, declaring violence a major and growing health problem across the world. Violence has probably always been part of the human experience. Its impact can be seen, in various forms, in all parts of the world. Each year, more than a million people lose their lives, and many more suffer non-fatal injuries, as a result of self-inflicted, interpersonal or collective violence. Overall, violence is among the leading causes of death worldwide for people aged 15-44 years (22).

Guns and cars have long been among the leading causes of non-medical deaths in the US. By 2015, firearm fatalities will probably exceed traffic fatalities for the first time, based on data compiled by Bloomberg (23). While motor-vehicle deaths dropped 22 percent from 2005 to 2010, gun fatalities are rising again after a low point in 2000, according to the Atlanta-based Centers for Disease Control and Prevention. Shooting deaths in 2015 will probably rise to almost 33000, and those related to autos will decline to about 32000, based on the 10-year average trend (24).

CONCLUSION

Since in the US by 2015, firearm fatalities are expected to exceed traffic fatalities for the first time (19), with the improvement of technology and transport system and easy access to firearms all around the world, this possibility cannot be ruled out for other countries, too. Though we cannot deny the fact that in all the trauma cases MVA has the highest mortality and morbidity rates for the past decade, violence and the resulting morbidity and mortality occupy very large portion of forensic emergency medicine. Our fear is that these out of hospital violence carries very high risk for the emergency medicine providers and could be one of the leading causes of violence towards the medical workers, too. Therefore it should be prevented or reduced to minimal level through, small-scale individual, community, civil societies efforts to national policy and legislative initiatives. Despite the fact that violence has always been present, the world does not have to accept it as an inevitable part of the human condition. As long as there has been violence, there have also been systems - religious, philosophical, legal and communal – which have grown up to prevent or limit it .

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