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Violence: Recognition, Management, and Prevention

SURVEY RESULTS OF WOMEN WHO HAVE BEEN STRANGLED WHILE IN AN ABUSIVE RELATIONSHIP

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□ **Abstract—Few studies attempt to examine individual methods of domestic abuse. The objectives of this study are to evaluate strangulation as a method of domestic violence abuse: to determine the incidence of strangulation occurrence within the cycle of domestic violence, the subjective medical symptoms experienced by victims of intimate partner strangulation, and the elective utilization of health care following a strangulation incident. Sixty-two women were surveyed at two women's shelters in Dallas, Texas and Los Angeles, California and the Parkland Health & Hospital (PHHS) Violence Intervention Prevention (VIP) Center in Dallas, Texas. Each patient was individually interviewed and verbal responses were recorded. Statistics were performed using the SPSS program. Of the 62 surveyed, 42 (68%) had been strangled by their intimate partner who was a husband (23, 55%), boyfriend (13, 31%), or fiancé (2, 5%), by a mother, stranger, or friend (1 each). Strangulation, as a method of domestic violence, is quite common in women seeking medical help or shelter in a large urban city. This study suggests that strangulation occurs late in the abusive relationship; thus, women presenting with complaints consistent with strangulation probably represent women at higher risk for major morbidity or mortality.**
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□ **Keywords—domestic violence; intimate partner violence; strangulation; choking; throttling**

INTRODUCTION

Domestic violence (DV), or intimate partner violence (IPV), has received increasing attention in the recent medical literature. Studies indicate that IPV has reached epidemic proportions with 4 million women being abused annually and 2 million women being seriously injured at the hands of their partners (1). Many investigators have outlined the incidence and prevalence of violence against women; however, few have established the numbers for individual methods of abuse, such as strangulation.

The objectives of this study were to ascertain the prevalence of strangulation as a method of domestic violence; to define the occurrence of strangulation within the cycle of violence; and to examine subjective medical symptoms experienced, and elective utilization of health care by female victims of non-lethal intimate partner strangulation. We hypothesized that strangulation as a method of abuse is more common than previously recognized, occurs late in the cycle of violence, and that strangulation, as a method of domestic violence, is quite

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common in women seeking medical help or shelter in a large urban city.

BACKGROUND

Although no study has examined methods of IPV and strangulation specifically, many studies have retrospectively and prospectively investigated women presenting to urban Emergency Departments (EDs). These studies have attempted to discern injury patterns and identify predictors that will allow providers to identify battered women more effectively (14,15). The studies also have shown that the head and neck are the most common sites for IPV related injuries (16). In a multi-center trial of 9,057 women, 237 presented for acute battering related injuries. This study did not specifically address whether the injuries reported resulted from strangulation events, however, 5 of the 237 presented with neck abrasions or contusions suggestive of strangulation related trauma (14).

A large percentage of the current literature about strangulation is found in pathologic or forensic journals and describes the post-mortem characteristics of strangulation related injuries (7–13). In most cases, however, no indication is made that identifies the perpetrator or links the crime to domestic violence. A forensic study from New York examined 25 cases of homicidal strangulation out of 320 total homicides. The victims in 12 of the 25 homicides were women. Retrospective analysis of 3 cases identified the husband as the perpetrator, yet these findings were noted only in the comments section of the study, thus, an accurate inference as to the incidence of strangulation could not be made (4). Although post-mortem strangulation is well established, almost no studies question the event of the woman who survives non-lethal strangulation sustained as the result of IPV. A few case studies have been published outlining cerebrovascular accidents as a result of carotid dissection or injury up to two weeks after non-lethal strangulation (23,24). These case studies fail to establish prevalence data regarding intimate partner strangulation; however, they do indicate that non-lethal strangulation can have detrimental medical complications up to two weeks after the strangulation incident.

Strangulation, in general, is produced by a constant application of pressure to the neck. Depending on the method of pressure application, strangulation can be described as one of four types: (1) hanging; where the weight of the body is suspended by a ligature of some sort (the most common reported mechanism of hanging in general); (2) ligature strangulation (garroting) where the pressure is solely applied by the ligature and not the weight of the body; (3) manual strangulation (throttling) where outside pressure is applied by a hand or hands; and (4) postural strangulation where the neck is placed over an object and the weight of the body applies pressure to the neck (2). Strangulation also has been described according to the setting in which it occurs, namely, homicidal, accidental, suicidal, or judicial (2).

Clinical sequelae of strangulation may include complications affecting the superficial neck region such as parchment compression grooves from hands or ligature, petechial hemorrhages, scratch marks or abrasions. Sequelae affecting the respiratory system can be manifested as difficulty breathing, airway compromise, pneumonia, and adult respiratory distress syndrome. Finally, post-anoxic encephalopathy, psychosis, amnesia, cerebrovascular accident, and progressive dementia may be indicative of neuropsychiatric effects (5,6,23,24). The pathophysiology of strangulation in the literature has been reported primarily based on reports and studies in the forensic pathology literature that stress the pathophysiology of homicidal, suicidal or judicial strangulation with only a limited number of studies addressing manual strangulation directly. The pathophysiology of manual strangulation has been postulated to involve venous obstruction and subsequent loss of consciousness resulting from stagnant hypoxia. The body then becomes flaccid; muscle tone in the neck decreases and increased pressure on the neck results in arterial occlusion, and eventual airway compromise. If the increased pressure is sustained, death results (5).

MATERIALS AND METHODS

A survey developed by the authors consisting of open and closed-ended questions was administered to the women included in the study. Each participant was individually interviewed confidentially by having the interviewer verbally read the questions to the participant and additionally allowing the participant to read the written questions. Spanish interpreters were used when applicable. This study was conducted at three sites including; the Parkland Health and Hospital System (PHHS)/Violence Intervention and Prevention (VIP) Center, a domestic violence women's shelter in inner city Dallas, and a women's shelter in inner city Los Angeles, CA. The survey was administered over a 1-month period at the VIP Center. In Los Angeles, it was administered to all women seeking shelter over a 1-week period. In the Dallas shelter, it was administered to all women in two separate 1-day periods. Inclusion criteria were over 18 years of age and having been previously or currently involved in an abusive relationship. Exclusion criteria were unable to speak either English or Spanish, previously surveyed for the same study, and declining to

Table 1. History of Abuse in Victims of Strangulation

Question	(n)	Valid Percent (%)
Strangled while in an abusive relationship	42/62	68
Who was the abuser?		
Husband	23/42	55
Boyfriend	13/42	31
Fiancé	2/42	5
Friend, stranger, mother, grandmother	1 each/42	9
Abuser lives in same house	37/40	93
Abuser threatened to kill subject	33/38	87
Subject feared death during the strangulation	28/40	70
Abuser history of strangulation in prior relationships	9/37	24
History of abuse as a child (subject)	26/57	45
History of abuse as a child (abuser)	23/30	77
History of strangulation (abuser)	2/26	8

Percents are "valid" percentages, excluding unanswered questions.

participate in the survey. Written informed consent was obtained from each study participant. Demographic data were collected on all participants; however, if the woman answered "No" to the question, "Have you ever been strangled?" the survey interview was terminated.

Female patients from the Parkland Hospital ED, who were found to be at risk for involvement in violent intimate partner relationships, were referred to the VIP Center in Dallas. Each patient was asked to participate in a "study regarding violence" with no indication of the exact nature of the study or the researcher's interest in strangulation events. At the women's shelters in Dallas and Los Angeles, all female residents were approached by the authors during group activities and were asked if they would participate in a "study regarding domestic violence." All women who attended the above group activities were asked to volunteer in the study. Although information was not collected on those women who did not volunteer, it was the impression of the examiners that the majority of women at the group meetings participated. It was explained at each of the three centers that all information was confidential and coding would be used instead of patient names.

Data analysis was performed using the SPSS statistical program. Percentages reported in results are "valid percents," thus excluding missing or unanswered data. Patients were asked if they experienced selected medical symptoms within two weeks following the strangulation episode. Answers were recorded as "yes," "no," or "prior." An answer of "prior" indicated that the symptom was present before being strangled.

This study was approved by the institutional review boards of the University of Kansas School of Medicine, the University of Texas Southwest Medical School, Parkland Hospital, and by the appropriate committees at the women's shelters in Dallas and Los Angeles.

RESULTS

A total of 62 women participated in the study. None of the participants was excluded based on the above exclusion criteria. At the VIP center, 6 women participated while 21 and 35 study subjects were enrolled at the women's shelters in Dallas and Los Angeles, respectively. Demographic data were recorded on all 62 participants. The diverse study population consisted of Hispanic (26, 42%), Caucasian (22, 36%), African American (10, 16%), and other (4, 6%). Most of the subjects had children (59, 95%), averaging 2.3 (SD = 1.2) children per family with the average age of the children being 6.9 (SD = 5.9) years. More than half of participants (26, 46%) had a history of childhood abuse.

A total of 42 (68%) women had a history of being strangled. Data regarding history of abuse was completed by the 42 victims of strangulation (Table 1). The abusers were identified as the husband (23), boyfriend (13), fiancé (2), and mother, stranger, and friend (1 each). The abuser resided in the same house with the victim 93% of the time (37). The average duration of the relationship before being strangled was 5.2 years (SD = 8.2), and the average length of abuse before the initial strangulation episode was 3.1 years (SD = 4.4). Thirty-three (87%) of the strangled women had been threatened with death by their abuser, and 28 (70%) thought that they were going to die while being strangled. Nine (24%) of the women who identified their abuser reported that the abuser had a history of strangulation perpetration in a prior relationship. The study participants reported that 23 (77%) of the abusers had a history of being physically or sexually abused as children; and 2 (8%) of the abusers had a known history of previous strangulation as victim.

The characteristics of the strangulation episode experienced by the 42 participants with a history of strangu-

Table 2. Characteristics of Strangulation Episodes

Survey Question	(n)	Valid Percent (%)
What was the location of the strangulation episode?		
Home	31/40	78
Car	1/40	3
Public	2/40	5
Home and car	4/40	10
Home and public	1/40	2
Other	1/40	2
What was used to strangle?		
Two hands	18/42	43
One hand	4/42	10
Rope	1/42	2
Clothing	1/42	2
Forearms	2/42	5
Seatbelt	1/42	2
Chain	1/42	2
Multiple ways	13/42	31
How many times were you strangled?		
1–2	22/41	54
3–5	9/41	22
6–10	4/41	9
11–20	6/41	15
Duration of the strangulation attack (minutes)?		
0–1	12/30	40
1–5	14/30	47
5–10	3/30	10
>10	1/30	3
Attempted hanging?	1/26	4
Concurrent forms of abuse?		
Physical	3/37	8
Verbal and Physical	25/37	68
Verbal, Physical, and Sexual	6/37	16
Verbal and Sexual	1/37	3
Other	1/37	3
Substance abuse by the abuser at the time of strangulation	39/42	93
Strangulation attack witnessed	16/41	39
Strangulation attack reported to the police	16/42	39
The outcome of the report?		
Prison/jail	8/15	53
Probation	1/15	7
Case pending	1/15	7
Charges dropped	1/15	7
Other/unknown	2 each/15	13
‘Protection from abuse’ order sought after strangulation	19/39	49
Subject strangled after the PFA was issued	3/24	13

Percents are “valid” percentages, excluding unanswered questions.

lation are detailed in Table 2. The strangulation attacks, which occurred most often in the home (31, 78%), were effected by the abuser using two hands (18, 43%), one hand (4, 11%), rope or seatbelt (1 each, 2%), or multiple combinations of the above (13, 31%). One subject reported that her abuser had attempted to strangle her by hanging. Most of the subjects reported that they were strangled an average of 5.3 times (SD = 6.3) during the relationship with the majority (26, 87%) of the attacks lasting less than 5 min.

Strangulation was rarely the only method of abuse during individual attacks. Thirty-seven (88%) experienced other types of abuse, most commonly physical and verbal abuse (25, 68%), immediately surrounding strangulation. Substance abuse by the abuser was a co-morbid condition at the time of the attack for 39 (93%) of the study subjects. The attack was witnessed in 16 cases (39%), the same number of subjects who reported the strangulation to the police. Eight of the fifteen abusers were sentenced to jail or prison, one received probation, one had the charges dropped, one case was pending, and the disposition of two cases was unknown. Nineteen women (49%) sought a protection from abuse (PFA) order against their abuser. Three (13%) were strangled after the PFA was granted.

Twelve subjects (29%) sought medical help after be-

Table 3. Medical Symptoms Experienced Within Two Weeks Post Strangulation Episode

Symptom	Yes (n)	Valid percent (%)
General		
Dizziness	25/41	61
Loss of consciousness	7/41	17
HEENT		
Vision change	11/40	28
Ringing in ears (tinnitus)	14/39	36
Sore throat	24/41	59
Voice change	18/40	45
Difficulty swallowing (dysphagia)	17/39	44
Neck pain	28/41	68
Neck swelling	14/40	35
Nose bleed	4/41	10
Respiratory		
Difficult breathing	34/40	85
Gastrointestinal		
Heartburn/acid reflux	10/34	30
Genitourinary		
Miscarriage	4/38	11
Involuntary urination (incontinence)	4/38	11
Skin		
Scratches on neck	18/41	44
Tiny red spots (petichiae)	22/41	54
Red linear marks	26/41	63
Rope or cord burns	3/40	8
Neurological		
Eye lid droop (ptosis)	8/40	20
Facial droop	4/39	10
L or R sided weakness	7/39	18
Paralysis	2/40	5
Loss of sensation	12/39	31
Psychiatric		
Memory problems	12/39	31
Depression	30/37	81
Suicidal ideation	12/39	31
Insomnia	26/39	67
Nightmares	27/39	70
Anxiety	33/40	83

Percents are "valid" percentages, excluding unanswered questions.

ing strangled, and 2 (5%) required hospitalization for strangulation related injuries that included respiratory distress and upper left extremity paralysis. Table 3 details the frequencies of the medical symptomology associated with the 42 women who were strangled. The physical manifestations, occurring within two weeks of the strangulation episode, included difficulty breathing, red marks on the neck in a linear pattern, a change in vision as well as the voice. Neurologic manifestations included ptosis, facial droop, loss of sensation, loss of consciousness, extremity weakness, and paralysis.

DISCUSSION

As we hypothesized, strangulation as a method of intimate partner violence is common (68%) among battered women who seek help from a hospital-based, advocacy-oriented medical treatment center and domestic violence shelters.

This study shows that women who have been strangled experience a myriad of clinical symptoms including loss of consciousness, scratches on the neck, vision changes, dysphagia, neck pain, and psychiatric problems that include depression and Post Traumatic Stress Disorder (PTSD). Previous case studies have reported incidents of cerebrovascular accidents (CVA's) as a result of injury or dissection of the carotid artery, generally occurring within two weeks after the strangulation attack (23,24). These findings, in addition to the data from this study, support the hypothesis that strangulation is a comorbid condition with a myriad of other physical and psychological problems experienced by a battered woman. Although further studies are indicated to verify the frequencies of such complaints, the above symptoms are possible markers for a battered woman. Many studies have attempted to establish chief complaints or physical findings as predictors with high positive predictive values to identify the abused woman. Muelleman et al. studied 9,057 women to compare injury location and types among battered and non-battered women (14). Although injuries were more common among abused women, all variables had low positive predictive values. Considering the poor predictability of injury location, injury type, subjective complaints of the victims of IPV, and the seriousness of strangulation injuries, we support the call for universal screening of all female patients who present for medical care in the ambulatory or emergency setting (19).

We acknowledge the limitations of this study. First, participants were asked to volunteer and were not selected through randomized sampling, thus making volunteer bias a source of potential influence upon the data obtained. Second, verbal or written survey questions that the study subject did not understand were explained by the investigator, raising the possibility that investigator bias was introduced into the study. Third, these responses are based upon patient recall of the events of the strangulation episode, subjecting our findings to recall bias. Finally, the clinical symptoms described in the survey were confirmed without clinical examination at the time of the complaint or chart review to confirm documentation of symptomology by a medical professional.

Studies have shown that an estimated 1 to 1.4 million women seek care in EDs for domestic violence related injuries (20,21). In 1987, Bowker found in a national survey that 39% of battered women seek medical help for injuries sustained at the hand of their abuser (22). Our study was similar in that 29% sought medical help after the strangulation attack, with 2 requiring admission to the hospital for treatment.

This study explores preliminary incidence data both

quantitatively and qualitatively regarding strangulation in victims of intimate partner violence. We found alarming data confirming that approximately 68% of battered women seeking shelter or help at a violence prevention clinic in a hospital setting are also strangled in association with an abusive relationship.

CONCLUSION

In our study, strangulation occurred late in the relationship (an average of 5.2 years before ever being strangled and, on average, 3.1 years after other methods of physical abuse began). Ninety-one percent of women were strangled in the home by an intimate partner. Additionally, 93% of abusers lived within the same household. The strangulation episode was witnessed 39% of the time by friends or family. Strangulation episodes were most commonly associated with verbal and physical abuse. Manual strangulation far outweighed ligature, postural, or hanging. Eighty-seven percent of the abusers had previously threatened to kill their victims and 70% of the victims thought that they were going to die as a result of the strangulation episode. Our subjects reported that 77% of their abusers had a previous history of childhood abuse.

RECOMMENDATIONS

These findings suggest that strangulation in physically abused women is an important history suggesting that these women may be at higher risk for severe, ongoing intimate partner violence. We strongly recommend that universal screening for intimate partner violence be employed with all female patients presenting to an ED or urgent care clinic. In the primary care office setting, universal screening for IPV should be employed in all new patients as well as in repeat patients presenting for annual examinations and in those patients who present with signs and symptoms of injury. If the patient is identified to be positive for IPV, further screening is indicated to determine if strangulation has occurred. Patients who are positively identified for strangulation require further inquiry regarding the history of strangulation and additional evaluation for associated injuries that may require hospitalization and treatment. Finally, these observations are strongly indicative of the need for further investigations that examine strangulation as a form of IPV and the potential health risks and lethality for women who are physically abused.

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