

STRANGULATION:

What every nurse must recognize

Patients who've been strangled are at risk for negative outcomes, both medical and psychological. Learn how to spot the signs and symptoms, and how best to care for these patients.

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In part 1 of our Violence Prevention Series, we examined risk factors for IPV perpetrators. In part 2, we acknowledged men as survivors of sexual assault. In this final installment, we take a look at caring for a patient who's been strangled. Defined as "the sustained impairment of air or blood flow through the neck as a result of external pressure," strangulation is a serious health concern that can have acute and long-term effects. Strangulation occurs for a variety of reasons, such as attempted suicide, homicide, playing choking games, and erotic stimulation. Ligature strangulation is most often seen in suicide cases, whereas manual strangulation is seen largely in cases of attempted homicide.

Because strangulation is one of the most lethal forms of intimate partner violence (IPV) experienced by women and considered a significant risk of future lethal violence, nurses need to be able to accurately identify, screen, respond to, and treat the patient who's been strangled.

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Screening

Women are disproportionately affected by strangulation. One method to identify cases of strangulation is by screening for IPV. The U.S. Preventive Services Task Force recommends that all women age 14 to 46 be routinely screened for IPV and referred to services if needed. However, many common IPV screening tools don't include questions specific to strangulation.

Anyone at risk for strangulation, such as patients with a history of IPV, sexual assault, dating violence, or stalking should be screened for possible occurrences of strangulation. Questions to ask include:

- Have you ever been strangled?
- What was the mechanism of strangulation?
- What was the duration of
- strangulation?
- Were you shaken?
- How many times were you strangled?
- Did you experience any period of loss of consciousness?

Victims of strangulation don't always report the episode, they may minimize the event, or they may lack the ability to recall the event due to impaired memory that can be a result of being strangled. They may not recognize their symptoms as being caused by strangulation or they may be in a situation where they're afraid to report the event. In addition, the term strangulation may not be correctly understood by patients who may use choking and strangulation interchangeably. Be aware of these factors and ask questions in a sensitive manner.

Types of strangulation

- Postural strangulation: Pressure or tightening on the neck from an object other than a band or other type of ligature
- Ligature strangulation: Pressure or tightening on the neck from a band or other type of ligature, often seen in cases of hanging
- Manual strangulation: Pressure or tightening on the neck from one or both hands

Signs and symptoms

In cases of strangulation, there are often few or no signs and symptoms. Unlike other forms of violence, perpetrators often deliberately leave little or no marks. Anyone who seeks healthcare and reports any type of strangulation should have a comprehensive medical evaluation even if there are no obvious injuries due to the multiple systems that can be involved and affected (see *Signs, symptoms, and assessments*).

Neurologic

One major medical sequela of strangulation is hypoperfusion, which can lead to cerebral hypoxia. Lack of oxygen can lead to irreparable brain injury, which may not occur for hours or days after strangulation. In addition, venous obstruction as a result of direct pressure to the jugular system can lead to vascular congestion and edema.

Neurologic symptoms can include mild headaches, memory loss, mental status changes, seizures, loss of consciousness, and incontinence. Patients may exhibit acute or long-term behavioral changes, such as anxiety, depression, posttraumatic stress disorder (PTSD), agitation, sleeplessness, and memory problems.

A neurologic assessment must be performed for all patients who report a recent, old, or suspected strangulation. Assessment should include the patient's mental status, Glasgow Coma Scale score, cranial nerves, motor function, and pupillary response. Magnetic resonance imaging (MRI) of the head may be required to rule out anoxic brain injury and edema.

Cardiovascular

When strangulation occurs, pressure may have been applied to the carotid artery and sinuses, jugular veins, and vagal nerves, which can elicit the vagal response causing reflex bradycardia, cardiac arrhythmias, vasovagal syncope, loss of consciousness, and cardiac arrest. A

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Siyns, Symptoms, and assessments		
	Signs and symptoms	Nursing assessment and interventions
Neurologic	 Headaches Altered mental status Loss of memory or consciousness Seizures Behavioral changes: anxiety, depression PTSD Incontinence 	 Glasgow Coma Scale score Cranial nerves assessment Motor function test Pupillary response CT scan MRI
Cardiovascular	Cardiac arrhythmiasVasovagal syncopeCardiac arrest	ECG Cardiac telemetry
Eyes	Periorbital petechiaeSubconjuctivial hemorrhage, ptosisVision changes	Visual acuitySlit lamp testReferral to ENT consultation
Ears	Bruising behind the earsTinnitus	Hearing testSkin assessment
Mouth	 Swelling or edema of the lips, tongue, or uvula Petechial hemorrhages on the tongue, gingival tissues, or mouth palate 	Oral assessment
Neck/throat	 Injury to the skin Sore throat Difficulty swallowing Hoarseness or aphonia Hyoid bone fracture Esophageal edema or rupture 	 Speech/swallow assessment X-ray CT scan Forensic evidence collection
Respiratory	Breathing changesPulmonary edemaAspiration pneumoniaRespiratory distress	Lung assessmentChest X-rayCT scan
Skin	 Direct injury to the neck; petechiae, bruises, abrasions, ligature marks, and pattern injuries Defensive wounds on hands and arms Commons areas of injuries: face, behind the ears, chest, and neck 	 Skin assessment and documentation Wound care Forensic evidence collection Photographs of wounds

Cian

cardiovascular workup may be indicated depending on the degree of trauma and symptoms. All patients should have an ECG and a period of cardiac telemetry monitoring to ensure normal cardiovascular status.

Eyes/ears

Common injuries to the eyes associated with strangulation include petechiae,

subconjunctival hemorrhage, and ptosis. Periorbital petechiae occur when venous pressure acutely rises, resulting in congestion and capillary rupture around and on the sclera of the eye. Patients may also report changes in vision and may need a slit lamp exam to identify injuries.

The patient may experience tinnitus; ears should be inspected for bleeding.

CDC:

Nurses:

on the web

https://www.cdc.gov/violenceprevention/pdf/ ipv-technicalpackages.pdf

International Association of Forensic

www.forensicnurses.org/page/STOverview

Training Institute on Strangulation Prevention:

https://www.strangulationtraininginstitute.com/ resources/library/medical-radiographicimaging-recommendations

Bleeding in the ears without obvious signs of trauma may be an ominous indicator of strangulation. The area behind the ears should be assessed for bruising or possible pattern injuries caused by fingerprints.

Mouth

The mouth is an essential part of the assessment for patients who have a history of strangulation. The inside of the mouth should be observed for injuries. Swelling and edema of the lips, tongue, and uvula may be present. There may be petechiae on the tongue and gingival tissues, as well as the mouth palate. All patients should be assessed for a patent airway and closely observed for any changes.

Neck

The neck should be assessed for any visible injuries. Due to direct pressure on the neck, there may be injuries to the



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Violence Prevention Series, Part 1

Risk reduction: Intimate partner violence

http://journals.lww.com/nursingmadeincrediblyeasy/Fulltext/2017/07000/ Risk_reduction__Intimate_partner_violence.10.aspx

Violence Prevention Series, Part 2

Unseen! Male sexual assault survivors

http://journals.lww.com/nursingmadeincrediblyeasy/Fulltext/2017/09000/ Unseen_Male_sexual_assault_survivors.11.aspx laryngotracheal anatomy, causing a change in the patient's voice, hoarseness, or aphonia (complete loss of voice). Patients may experience a sore throat and difficulty swallowing. Hyoid bone fracture is the most common fracture found in strangulation cases. The hyoid bone consists of two bones that fuse together after age 30 in most people. Other fractures may involve the cervical vertebra, causing permanent disability; these fractures can be fatal.

Nursing assessment should include inspection of the neck and palpation for pain, tenderness, and subcutaneous emphysema. Patients may require X-rays to rule out fractures, tracheal deviation, tracheal rupture, or subcutaneous emphysema. All patients with neck injuries should have an early computed tomography (CT) scan to determine bony, cartilaginous, and soft tissue injuries, and an ear, nose, and throat (ENT) consultation.

The Training Institute on Strangulation Prevention has a detailed algorithm for determining the types of medical/ radiographic evaluation for patients who've been strangled.

Respiratory

Respiratory complications include breathing changes, pulmonary edema, aspiration, and respiratory distress. Patients may have vomited during the strangulation event and been unable to clear secretions, causing aspiration pneumonia that can present days to weeks later. An X-ray to rule out pneumonia in the acute or longterm period may be needed. More lethal respiratory conditions, such as acute respiratory distress syndrome and neurogenic or obstructive pulmonary edema, may require a CT scan as part of the workup and close monitoring.

Skin

A thorough skin exam should be conducted and documented for forensic and legal purposes. Common injuries

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sustained during strangulation include petechiae, bruises, abrasions, ligature marks, and pattern injuries (such as fingerprints). Petechiae are commonly found around the eyes and appear as small nonblanchable red macules that result from ruptured capillaries due to internal pressure. Bruises, abrasions, lacerations, and pattern injuries to the skin are most commonly found on the neck, chin, behind the ears, chest, and shoulders.

Another area to assess for injuries is on the hands, especially the fingers and nail beds, sustained by patients trying to grab hold of and release the object or hands that are strangling them. As a result of trying to reverse, release, or defend themselves, patients may develop defensive wounds. These are often wounds to the back of the hands and arms sustained when patients try to shield themselves.

A note on pregnant women

When strangulation occurs when a woman is pregnant, it can have an effect on the pregnancy. Strangulation in the early stages of pregnancy may result in vaginal bleeding and miscarriage. In the later stages, it may result in preterm labor, an anoxic event to the fetus, and even fetal demise.

Pregnant women in the first or second trimester may need an ultrasound to determine the viability of the pregnancy and to detect fetal heart sounds if not heard by Doppler. Women in the third trimester may need a nonstress test to determine fetal heart rate and contraction. They may also need more comprehensive testing, including an ultrasound, biophysical profile, and 24-hour monitoring in a labor and delivery unit.

Documentation

Documentation of strangulation should be precise and accurate because there may be legal implications, such as

memory jogger

To document strangulation cases, think BALD STEP.

- B Bite mark, bleeding, bruise, burn
- A Abrasion, avulsion
- L Laceration
- Deformity

Swelling, stains

- T <u>⊺end</u>erness, trace evidence
- E Frythema
- P Patterns, petechiae, penetrating wounds

attempted homicide. Many states now consider strangulation a felony. Documentation should include a detailed description of the injuries, measurements, and photographs if possible. The BALD STEP mnemonic is an assessment tool that focuses on trauma-related injuries and allows for more precise documentation of general and genital injuries, as well as documentation of strangulation cases.

Forensic evidence may need to be collected; be familiar with your state laws and protocols regarding evidence collection. Additional forensic photos should be taken and kept with the patient's medical records for medical and legal purposes. Most EDs have protocols for taking photographs. If the strangulation occurred in the context of a sexual assault, the patient should be seen by a sexual assault nurse examiner (SANE) if available. A SANE has extensive training and education in assessing, documenting, and photographing injuries. In other cases of strangulation, and if the patient agrees, it may be necessary to involve law enforcement to photograph injuries, especially if injuries don't manifest until several days after the incident.

Discharge and follow-up

It's essential that patients receive detailed discharge instructions. Information should include symptoms that need to be



did you know?

Strangulation differs from choking, which occurs when the trachea is blocked by an object. The latest CDC data show a lifetime estimate of choking to be as high as 9.2% in women and 0.7% in men.

reported to a healthcare professional, comfort measures, wound care instructions, medication information, and any follow-up appointments. The International Association of Forensic Nurses has detailed instructions for victims of strangulation.

All patients should have follow-up visits. Injuries sustained from strangulation can persist or appear days, weeks, and months after the incident. Due to edema from the acute trauma, injuries may be overlooked at the time of the initial visit or may not occur until a later time after the strangulation. Follow-up visits should include a full assessment to ensure that injuries are healed or healing and other injuries weren't missed.

Additional photographs should be obtained for chronologic sequencing and to visually demonstrate long-term physical effects of the strangulation. Some law enforcement agencies take follow-up photographs at 24, 48, and 72 hours after the strangulation event or for as long as visible injuries are present.

Safety is paramount

Strangulation, especially within the context of IPV, is considered a red flag due to the association of future escalating violence, including homicide. Any patient who reports strangulation must have a safety assessment performed at each visit. In addition, strangulation often occurs while other violence is happening, such as death threats, general physical abuse, and control issues. Ongoing safety screening for all forms of IPV should occur to ensure our patients' safety.

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