Section 1: The Lethality of Strangulation

Why this training?
San Diego 1995: 2 teenagers were killed
Casondra Stewart 17 yr
Tamara Smith 16 yr
Common denominator - strangulation

San Diego City Attorney’s Office 1995 Study
- 300 attempted strangulation cases
- 42% No visible injury
- 20% Pain only
- 22% Minor visible injury
- 16% Visible injury

San Diego City Attorney’s Office 1995 Study
- 90% of cases had a DV history
- 50% of cases –children were present
- 99% of suspects were men

Strangulation is a Red Flag

Shelter and hospital study
- “What made you believe you were in a great amount of danger?”
- Majority of women mentioned
- “Choking”
  Stuart & Campbell, 1989

Meta Analysis
“Nonfatal strangulation is a risk factor for lethal violence in several studies...These results underscore the need to screen specifically for nonfatal strangulation when assessing abused women.”
  Campbell, Glass, Sharps, Laughon, Bloom, 2007

Intimate Partner Femicide Study
- A prior non-fat fatal strangulation increases the risk of homicide seven-fold
- Victims of attempted (45%) or actual (43%) femicide had history of “choking”
- (vs. 10% of other abuse women)
Risk factors for femicide
- Multisite study, 307 cases:
  - 70% were physically abused before their deaths by same partner who killed them.
  - Campbell et al. 2003

Strangulation & Sexual Assault
At least 50% of all DV cases include sexual assault.
At least 25% of all DV cases include strangulation.
At least 25% of all sexual assault cases include strangulation.

Pregnancy
- Study of pregnancy-associated mortality found that homicide was the leading cause of death among pregnant women.
  - JAMA 2001
- Maternal mortality in the US has decreased dramatically over the past century, however, maternal mortality due to injuries has not decreased.

Strangulation accounts for 10% of all violent deaths in the United States
- Funk & Schuppel, 2003
- McClane, Strack & Hawley, 2001

Survey of Battered women
- 68% experienced strangulation as a method of violence
- 53% manual
- 8% rope, clothing, seatbelt and chain
- 5% forearms
- 31% multiple methods
  - Wilbur et al., 2001

Chicago Women’s Health Study
- 494 women using health services and reporting intimate partner violence
- >47% reported attempted strangulation
  - Block et al. 2000

Multiple Episodes
- 34% strangled 3-5 times
- 23% more than 5 episodes
  - Smith et al 2001
Females are 6 times more often victims than males
A female can strangle a male twice her size
Male assailants are often intoxicated

Devastating to a victim
\- Overwhelming feeling of helpless and vulnerability
\- Haunting experience
\- Frightening to know that someone who loves you is willing to kill you
\- Constant feeling of terror, danger and doom

Section 2: Physiological Effects of Strangulation

*Seconds to Unconsciousness, Minutes to Death*

Patients can die up to 36 hours – or later- with *no visible external injuries*

“Choking,” more accurately defined as *strangulation*, is a common mechanism of injury in victims of IPV and is often under assessed and underappreciated by health care professionals.

Sheridan and Nash, 2007

Strangulation vs. Choking

Choking - Obstruction of the air passages due to a foreign body such as a piece of food
Strangulation - A form of asphyxia characterized by closure of the blood vessels and air passages of the neck as a result of *external* pressure on the neck

Victim reports “choking”

“Strangulation” is the objective term used in documentation

3 Forms of Strangulation

\- Manual
\- Ligature
\- Hanging
  - Suicide
  - Autoerotic-asphyxia

Definitions

\- **Manual** - A form of strangulation caused by an external pressure on the structures of the neck by hands, forearms or other limbs.
\- **Ligature** – A form of strangulation in which the pressure on the neck is applied by a constricting band tightened by a force other than the body weight
\- **Hanging** – A form of strangulation in which the pressure on the neck is applied by a constricting band tightened by the gravitational weight of the body or part of the body.

4 Important Structures
- Vessels
- Muscles
- Cartilage
- Bones

Vessel Occlusion - time to unconsciousness
- **Carotid artery occlusion**
  - 11 pounds of pressure for 10 seconds
- **Jugular vein occlusion**
  - 4.4 pounds of pressure for 10 seconds

Signs and Symptoms
- Voice changes
- 50% of victims
- Laryngeal nerve and/or larynx injury
- Hoarseness (dysphonia)
- Loss of voice (aphonia)

Signs and Symptoms
- Swallowing changes
- Due to larynx injury
- Difficulty swallowing (dysphagia)
- Painful swallowing (odynophagia)
- Tongue swelling due to venous engorgement

Signs and Symptoms
- Breathing changes
- Difficulty breathing (dyspnea) \(\rightarrow\) asthma
- Inability to breathe (apnea)
- Hyperventilation
- May appear mild; HOWEVER, soft tissue swelling can cause airway obstruction and death within 36 hours
- Raspy breathing (stridor) may be pre-mortal

Signs and Symptoms
- Neck swelling
- Venous engorgement
- Soft tissue injury
- Internal hemorrhage
- Laryngeal fracture
  - Subcutaneous emphysema
  - Hemoptysis
- Muscle spasms of neck

**Hyoid bone fracture**
- Supports the tongue and floor of mouth
- May close off airway in a matter of hours
- If isolated fracture, as a rule, only in strangulation

**Signs and Symptoms**
- Petechiae – due to venous congestion
- Subconjunctival hemorrhage

**Physiological Effects**
- Damage to blood vessels in the neck
- Intimal damage may cause blood clots
- Tears (dissection) of blood vessel walls may cause neck hematomas
- Injuries to airway may cause sub q emphysema
- Life-threatening complications hours, days, or weeks later

**Physiological Effects**
- Carotid dissections and occlusions may occur later (TIAs and stroke)
- 3 case studies women 24-43 yrs of age, 3 months to 1 year prior to presentation: carotid artery dissection resulting in CVA
  - Malek et al. (2000)
- 3 other case studies documented

**Physiological Effects**
- Delayed parkinsonism effects
  - Miao et al, 2009 (China)

**Signs and Symptoms**
- Neuropsychiatric effects
  - Early: Restlessness, combativeness, panic attack, flat affect, dizziness, vision changes, headaches, eyelid droop, weakness, paralysis, tinnitus, sensory defects, seizures, **loss of consciousness**, INCONTINENCE
  - Long term: psychosis, amnesia and progressive dementia
  - Anoxic encephalopathy may lead to brain death

**Evidence of unconsciousness**
- Loss of memory
- Standing up one minute then waking up on the floor
- Bowel or bladder incontinence
- Unexplained bump on head

**Signs and Symptoms**
- Vomiting - When struggling to breathe, air is swallowed and distends the stomach

**Physiological Effects**
- Negative pleuritic pressures
  - Pulmonary edema
  - Aspiration pneumonitis
  - Pneumonia
  - Acute respiratory distress syndrome

**Physiological Effects**
- Miscarriage – may occur later

---

**Section 3: Medical Evaluation**

**Neck Injuries**
- Erythema
- Bruises
- Abrasions
- Rope burns

**Claw marks may be on suspect**
- May be difficult to identify primary aggressor
- Primal instinct is to defend oneself

If there is petechiae on the skin surface, there is petechiae in the brain.
- Dean Hawley MD, Forensic Pathologist

**Subconjunctival Hemorrhage**
- Confluent capillary rupture in white portion (sclera) of the eyes
- Intermittent compression, release of victim’s neck by assailant

**The Choking Game**
- Unintentional strangulation
- Performed to oneself or another person
- Hands or noose
- Brief euphoric state caused by cerebral hypoxia
- CDC studied youths 6-19 yrs of age
- May be misinterpreted as suicide
- Warning signs in youth
  - Mention of game
  - Bloodshot eyes
  - Marks on neck
  - Frequent, severe headaches
  - Disorientation
  - Ropes, scarves, belts tied to furniture or doorknobs

What is Evidence?
- Forensic Documentation

Patient History
- Patient history is subjective; however it may be the only indication of lethality
- Use quotes
- Open ended questions
- Let the patient tell her story

Describe Method of Strangulation
- From the front
- From behind
- One hand or 2 hands
- Carotid restraint
- Ligature
  - Object used

How did you feel?
- Rush to my head
- Felt fuzzy
- I couldn’t breathe
- I thought I was gonna die

What did the suspect say?
- “If I can’t have you no one can.”
- “He was laughing when I came to on the floor.”
- “He told me no one would believe me since he doesn’t leave any marks.”

What did you see?
- “I saw the devil in his eyes.”
- “He was crazy.”

What were you thinking?


- “I knew he could kill me.”
- “I thought I was going to die.”

Why did he stop?
- “Someone knocked at the door.”
- “I passed out.”
- “My child started crying.”

DNA
- Wet to dry swabs
  - Neck
  - Areas of pressure erythema

Medical Evaluation
- Pulse oximetry
- Chest x-ray
  - Pulmonary edema
  - Subcutaneous emphysema
  - Pneumonia
  - Aspiration

Medical Evaluation
- Soft tissue neck x-ray
- Tracheal deviation
- Hyoid bone fracture
- Soft tissue swelling/air

Medical Evaluation
- Head/Neck CT or MRI
- Carotid doppler if lateralizing neurologic signs or suspect vascular injuries
- Laryngoscopy
- Evaluate for closed head injury

Medical Evaluation
- Study in Switzerland: 14 patients surviving strangulation
- Evaluated on physical exam by forensic physician then compared exam with MRI findings
- MRI may demonstrate life-threatening injuries not apparent on physical examination
- 4 patients with no petechiae and less severe injuries
- Hemorrhages in close proximity to “critical neck structures”, lymph node hemorrhage
All patients with petechiae also showed hemorrhages in close proximity to “critical neck structures”

**Documentation**
- Narrative history
- Checklists are helpful
- Photodocumentation
  - Patient demonstration
  - Wig head
- Body maps

**Strangulation discharge instructions**
- Return for
  - difficulty breathing
  - trouble swallowing
  - swelling of neck or throat
  - increased hoarseness or voice change
  - blurred vision
  - severe headache
  - weakness, numbness

**Symptom Log**
- Daily log of symptoms
- Skin changes
- Checklist of what to report immediately

**Seconds to Unconsciousness, Minutes to Death**
Patients can die up to 36 hours – or later- with *no visible external injuries*

San Diego City Attorney’s Office 1995 Study
- 300 attempted strangulation cases
- 42% No visible injury
- 20% Pain only
- 22% Minor visible injury
- 16% Visible injury
  - Medical forensic assessment/documentation is the missing piece in providing *safety* for our patients

**Legal Issues**
- Felony vs. Misdemeanor
The Impact of Minnesota’s Felony Strangulation Law
  o By Heather Wolfgram, MSW, LGSW, Court Monitoring Coordinator. Interviewees believed the law:
    – Increased awareness of the potential lethality of strangulation
    – Increased victim safety
    – Increased offender accountability
    – Should prevent homicides

*Now it’s up to you*

Use this information to help make **victims safer** and **batterers accountable** for the crimes they commit.

Share this information with your colleagues.