The Training Institute on Strangulation Prevention's Recommendations for the:

Medical/Radiographic Evaluation of Acute, Non-Fatal Adult Strangulation:

Goals: 1) Evaluate carotid and vertebral arteries for injuries

2) Evaluate bony/cartilaginous and soft tissue neck structures and the brain for injuries

Strangulation patient presents to the Emergency Department

(-)

(+)

Symptoms and History Associated with Life-Threatening Injuries*

History of and/or physical exam with ANY of the following:

- LOC (anoxic brain injury)
- Visual changes: "spots", "flashing lights", "tunnel vision"
- Facial, intraoral or conjunctival petechial hemorrhage
- Ligature mark or contusions on neck
- Soft tissue neck injury/swelling of the neck
- Incontinence (bladder and/or bowel from anoxic injury)
- Neurological signs or symptoms (i.e. LOC, seizures, mental status changes, amnesia, visual changes, cortical blindness, movement disorder, stroke-like symptoms.)
- Dysphonia/Aphonia (hematoma, fracture, laryngeal nerve injury)
- Odynophagia (hematoma, fracture, soft tissue swelling)
- Dyspnea (soft tissue swelling, hematoma, phrenic nerve injury)
- Subcutaneous emphysema (tracheal/laryngeal rupture)

History of and/or physical exam with:

- No LOC
- No visual changes: "spots", "flashing lights", "tunnel vision"
- No petechial hemorrhage
- No soft tissue trauma to the neck
- No dyspnea, dysphonia, odynophagia
- No drug/alcohol intoxication
- No neurological signs or symptoms (i.e. LOC, seizures, mental status changes, amnesia, visual changes, cortical blindness, stroke-like symptoms.)
- And reliable home monitoring

Radiographic Study Required To R/O Life-Threatening Injuries*

- CT Angio of carotid/vertebral arteries (gold standard for evaluation of vessels and bony/cartilaginous structures, less sensitive for soft tissue trauma)
- CT neck with contrast (less sensitive than CT Angio for vessels, good for bony/ cartilaginous structures)
- MRA of neck (less sensitive than CT Angio for vessels, best for soft tissue trauma)
- MRI of neck (less sensitive than CT Angio for vessels and bony/cartilaginous structures, best study for soft tissue trauma)
- MRI/MRA of brain (most sensitive for anoxic brain injury, stroke symptoms and intercerebral petechial hemorrhage)

Continued ED/Hospital
Observation (based on
severity of symptoms and
reliable home monitoring)

Consult

Neurology/Neurosurgery/Tr auma Surgery for admission

Consider ENT consult for laryngeal trauma with dysphonia, odynophagia, dyspnea or fractures

*References on page 2

Discharge home with detailed instructions to return to ED if: neurological signs/symptoms, dyspnea, dysphonia or odynophagia develops or worsens

Version 1.3, 2/16, WSS

References:

The Training Institute on Strangulation Prevention's Recommendations for the:

Medical/Radiological Evaluation of Acute, Non-Fatal Strangulation:

- 1. Christe A, Thoeny H, Ross S, et al. Life-threatening versus non-life-threatening manual strangulation: are there appropriate criteria for MR imaging of the neck?. Eur Radiol 2009;19: 1882-1889
- 2. Yen K, Thali MJ, Aghayev E, et al. Strangulation Signs: Initial Correlation of MRI, MSCT, and Forensic Neck Findings, J Magn Reson Imaging 2005;22:501-510
- 3. Stapczynski JS, Strangulation Injuries, Emergency Medicine Reports 2010;31(17):193-203
- 4. Malek AM, Higashida RT, Halback VV, et al. Patient Presentation Angiographic Features and Treatment of Strangulation-Induced Bilateral Dissection of the Cervical Carotid Artery: Report of three cases, J Neurosurg 2000;92(3):481-487
- 5. Di Paolo M, Guidi B, Bruschini L, et al. Unexpected delayed death after manual strangulation: need for care examination in the emergency room, Monaldi Arch Chest Dis 2009;Sep;71(3):132-4
- 6. Dayapala A, Samarasekera A and Jayasena A, An Uncommon Delayed Sequela After Pressure on the Neck: An autopsy case report, Am J Forensic Med Pathol 2012;33:80-82
- 7. Hori A, Hirose G, Kataoka, et al. Delayed Postanoxic Encephalopathy After Strangulation, Arch Neurol 1991;48:871-874
- 8. Iacovou E, Nayar M, Fleming J, Lew-Gor S, A pain in the neck: a rare case of isolated hyoid bone trauma, JSCR 2011;7(3)
- 9. Oh JH, Min HS, Park TU, Sang JL, Kim SE, Isolated Cricoid Fracture Associated with Blunt Neck Trauma; Emerg Med J 2007;24:505-506
- 10.Gill JR, Cavalli DP, Ely SF, Stahl-Herz J, Homicidal Neck Compression of Females: Autopsy and Sexual Assault Findings, Acad Forensic Path 2013;3(4):454-457
- 11. Sethi PK, Sethi NK, Torgovnick J, Arsura E, Delayed Left Anterior and Middle Cerebral Artery Hemorrhagic Infarctions After Attempted Strangulation, A case report; Am J Forensic Med Pathol 2012;33:105-106
- 12. Clarot F, Vaz E, Papin F, Proust B, Fatal and Non-fatal Bilateral Delayed Carotid Artery Dissection after Manual Strangulation, Forensic Sci Int 2005;149:143-150 13.