

Bound and Burned in Detroit

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Avedschmidt, Schmidt, Hlavaty, Moons, Sung, Gupta

PubMed Search "Criminal Burning" lead to 19 hits

- US:
 - Florida :Domestic Violence
 - Canada and South Carolina: Suicides
 - Michigan: Fire debris analysis
 - Texas: Homophobic
- Trans Atlantic:
 - 16 reports- Germany(5), Japan (2), India, Australia, Jordan, Tanzania, France

PubMed Search "Postmortem Burning+ USA" lead to 5 hits

1. A comparison of carcass decomposition and associated insect succession onto burnt and unburnt pig carcasses.
2. Titanium particles identified by energy-dispersive X-ray microanalysis within the lungs of a painter at autopsy.
3. Progressive necrotic myelopathy: clinical course in 9 patients.
4. Positive identification of cremains recovered from an automobile based on presence of an internal fixation device.
5. Arthropod succession patterns onto burnt carrion in two contrasting habitats in the Hawaiian Islands.

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- Wayne County
 - Population: 1.8 million
- 2017
 - 267 homicides
 - Rate of 40 per 100,000 people
 - Nationwide rate: 5 per 100,000

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- Search of WCMEO autopsy database
 - 2007-2018
 - Thermal injuries
 - Bound extremities
- 176 cases with thermal injuries where the manner of death was ruled a homicide
- 31 cases had mention of thermal burns/soot inhalation/carbon monoxide poisoning
- 145 cases represented postmortem burnings
- 8 of these cases were found have bound extremities

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- Postmortem thermal injury
 - Requires absence of vital reaction
 - Carboxyhemoglobin < 10%

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- Demographics for 145 cases
 - Female: 20%
 - Male: 79%
 - Unknown 1%
 - White: 14%
 - Black: 76%
 - Hispanic 4%
 - Unknown: 4%
 - Average age: 39 years (Ranged from 1 to 69 years)

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- Cause of Death for 145 cases
- Gunshot wounds:
 - Single gunshot wounds (26%)
 - Multiple gunshot wounds (40%)
- Blunt Trauma (10%)
- Strangulation/Asphyxia (7%)
- Sharp force injuries (7%)
- Unable to be determined (7%) Reported undetermined in literature 5%

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- Unable to be determined (7%)
- Reported undetermined in literature 5%

Case 1: 45 M

Scene findings	Evidence of injury on autopsy	Burn details	Bound details	Toxicology
Discovered bound and burned in basement of burning home Hands and feet bound behind back Markedly decomposed	Skeletonization of neck region; well in advance of decomposition of rest of body Charred from head to shoulders Distal phalanges of right hand absent Digits 2 through 5 on left hand absent	Burnt from head to shoulders	Hogtie position Hands and feet bound with duct tape- tied together behind the back with USB cables and power cords	Cocaine positive

Case 2: 19 M

Scene findings	Evidence of injury on autopsy	Burn details	Bound details	Toxicology
Discovered bound and burned torso on interstate service drive Dismemberment of head and upper neck, bilateral forearms, bilateral lower legs- not located at the scene	Amputated head and neck through cervical spine Right upper arm amputation through humerus Left forearm amputation through radius and ulna Bilateral lower legs amputated through tibia and fibula Postmortem chop wound- right shoulder with fracture of right humerus Postmortem stab wound- left shoulder with no compromise of underlying vasculature Areas surrounding these injuries were charred	75% of available TBSA- sparing back and buttocks	Torso wrapped with blanket	CO negative

Case 3: F

Scene findings	Evidence of injury on autopsy	Burn details	Bound details	Toxicology
Discovered bound and burned in a vacant garage; fire contained to the area of the body causing little or no damage to garage Wire bound, charred remains recovered in pieces along with ashes	One gunshot wound- left parietal scalp with fracture to left parietal bone; soft tissue of the head was charred but the scalp remained Injury due to firearm: subdural hemorrhage to left cerebral hemisphere. Circular fracture surrounding depressed fracture of left parietal bone.	100% TBSA- charred, consumption of much soft tissue, internal organs, hands, heat fractures of the long bones	Bound by seven loops of copper wire	CO 2% COHb 5.9%

Case 4: 35 M

Scene findings	Evidence of injury on autopsy	Burn details	Bound details	Toxicology
<p>Discovered bound and burned in a vacant dwelling covered in a plastic bag</p> <p>Penetrating wound to groin area</p> <p>Odor of accelerant</p>	<p>Two gunshot wounds- right thigh and left thigh</p> <p>Blunt trauma- subgaleal hemorrhage underlying left parietal/ temporal scalp. Subarachnoid hemorrhage over right parietal/ temporal lobes of the brain. Linear fracture across base of skull with hemorrhage (hinge fracture). Multiple rib fractures (left 7-12)</p> <p>Sharp force injuries- total of five on head. One to dorsum of left hand, no discernible blunt edge</p> <p>Areas surrounding these injuries were charred</p>	<p>100% TBSA- head charred</p> <p>no evidence of soot in the airways</p>	<p>Bound by duct tape around knees, ankles, and chin</p>	<p>CO negative</p> <p>Ethanol 70 mg/dL</p> <p>Benzodiazepines positive</p> <p>Cocaine positive</p>

Case 5: 26 F

Scene findings	Evidence of injury on autopsy	Burn details	Bound details	Toxicology
<p>Discovered bound and burned in an alley</p> <p>Hands and feet bound behind back</p> <p>Covered in black plastic material- charring and molten appearance</p>	<p>Abrasions around neck; area surrounding these injuries was charred</p> <p>Hemorrhage to soft tissue and muscles of upper chest</p> <p>Microscopic sections of skin and right clavicle muscle had recent hemorrhage. Subcutaneous tissue of neck had recent hemorrhage</p>	<p>99% TBSA- 1st degree to charring</p> <p>sparing perineum</p>	<p>Hogtie position</p> <p>Hands and feet fastened together behind back with copper wire</p>	<p>Non-contributory</p>

Case 6: 35 M

Scene findings	Evidence of injury on autopsy	Burn details	Bound details	Toxicology
<p>Discovered bound and burned between two vacant houses</p> <p>Bound with tarp, sheets, and wire cable around head, torso, and lower extremities.</p> <p>Multiple gunshot wounds</p>	<p>Two gunshot wounds- right axilla and neck; areas surrounding the gunshot wounds were charred</p> <p>Injury due to firearm: fracture of left maxilla; focal subarachnoid hemorrhage; injury through right axillary bundle; brachiocephalic artery proximal to the aorta; rib fractures; hemothorax (800mL) into right chest cavity</p>	<p>Extensive burns- charred, skin splitting, heat fracture of femur</p>	<p>-Wrapped in white plastic tarp and two sheets, secured around the body with three wire cables (125 inches to 180 inches in length)</p>	<p>Ethanol 39 mg/dL</p>

Case 7: 59 M

Scene findings	Evidence of injury on autopsy	Burn details	Bound details	Toxicology
<p>Discovered bound and burned on kitchen floor of a house fire</p> <p>Hands and feet bound</p> <p>Odor of accelerant - gasoline</p>	<p>Four gunshot wounds- head, right arm, right hand, left hand- no bullet recovered</p> <p>The right arm suffered a gunshot wound and 2nd and 3rd degree burns; the areas of the remaining three gunshot wounds were not charred</p> <p>Injury due to firearm: multiple skull fractures; left frontal lobe contusion; fractured humerus</p> <p>Multiple abrasions to the head, right arm, and right shoulder</p> <p>Multiple lacerations to the scalp</p>	<p>Extensive burns- 2nd and 3rd degree burns to both arms, sparing the hands; left lateral thorax; abdomen; both legs sparing feet</p>	<p>Wrists bound with a black belt and ankles bound with a black HDMI cord</p>	<p>COHb 12%</p>

Case 8: 30 M

Scene findings	Evidence of injury on autopsy	Burn details	Bound details	Toxicology
<p>Discovered bound and burned between two houses</p> <p>Body bound with copper wire.</p>	<p>Intramuscular hemorrhage bilaterally in the superior sternocleidomastoid muscles and both inferior poles of the thyroid gland</p> <p>Areas surrounding these injuries were charred</p> <p>Pleural surfaces of both lungs covered in petechiae, lungs hyper-inflated</p>	<p>Charred anteriorly with sparing of skin on back.</p> <p>No soot in larynx or lower airways</p>	<p>Wrapped in two blankets</p> <p>Loops of copper wire bind body around neck, mid thorax; including upper arms but not the hands, and around the ankles</p>	<p>COHb 2%</p> <p>Ethanol 157 mg/dL</p> <p>Cocaine positive</p> <p>Cannabinoids positive</p> <p>Fentanyl positive</p>

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- Post-assault burning of a body does not usually obscure the injuries that caused death

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Question 1: Suspicion of charred remains as a homicide involving postmortem burning should include/s:
 Answer A: unfamiliar outdoor place, an absence of any vital response and presence of an accelerant
 Answer B: familiar place, the presence of a vital reaction
 Answer C: found inside the home with a suicide note
 Answer D: The absence of burns on feet
 Answer E: witnessed by others

Question 1 Correct Answer: Answer A

Rationale for Correct Answer: The homicides involving postmortem burning usually are discovered in an unfamiliar outdoor place They have a traumatic cause of death. There is an absence of any vital response to the thermal changes and an accelerant is usually present. Published Reference for Question 1: Postmortem burning of the corpses following homicide: A.Rıza Tümer et al. / Journal of Forensic and Legal Medicine 19 (2012) 223-228.
 Learning Objective for Question 1: Characteristics of postmortem burning of the corpses following a homicide.

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Question 2:
 What is reported % rate of unidentified causes of death in the literature for postmortem burning following a homicide
 Answer A: 5%
 Answer B: 4%
 Answer C: 2%
 Answer D: 1%
 Answer E: 3%

Question 2 Correct Answer: Answer A

Rationale for Correct Answer: The reported % rate of unidentified causes of death in the literature is 5%. Published Reference for Question 2: Criminal burning: L. Fanton et al. / Forensic Science International 158 (2006) 87–93
 Learning Objective for Question 2: To know the incidence of rate of unidentified causes of death

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References

1. Fanton L, Jdeed K, Tilhet-Coartet S, Malicier D. Criminal burning. *Forensic Sci Int.* 2006;158(2e3):87e93.
2. Tümer AR, Akçan R, Karacaoğlu E, Balseven-Odabaşı A, Keten A, Kanburoğlu C, *et al.* Postmortem burning of the corpses following homicide. *J. Forensic Leg. Med.*, 19 (4) (2012), pp. 223-228
