HARRIS COUNTY
INSTITUTE OF FORENSIC SCIENCES
SCIENCE. SERVICE. INTEGRITY.

Luis A. Sanchez, M.D.
Executive Director &
Chief Medical Examiner

AUTOPSY REPORT

Case No. ML21-1741

April 18, 2021

ON THE BODY OF

William Varner

CAUSE OF DEATH: Blunt force trauma and thermal injuries with smoke inhalation

MANNER OF DEATH: Accident

DATE OF DEATH: April 17, 2021

8/24/21

Paulyann Maclayton, M.D. MMDDYY
Forensic Pathology Fellow

Reviewed by:

8/24/21

Pramod Gumpeni, M.D. MMDDYY
Assistant Deputy Chief Medical Examiner

POSTMORTEM EXAMINATION ON THE BODY OF

William Varner

HISTORY: By report, this initially unknown 59-year-old White male was an occupant of a sedan that struck a tree and caught on fire at 18 Hammock Dunes Place, Spring, Harris County, Texas. The decedent was found in the back left passenger seat. He was declared dead at 9:37 p.m. on April 17, 2021. He was subsequently positively identified by dental comparison as William Varner. (See companion case ML21-1742.)

AUTOPSY: The autopsy is performed at the Harris County Institute of Forensic Sciences by Forensic Pathology Fellow Paulyann Maclayton, M.D., under the supervision of Assistant Deputy Chief Medical Examiner Pramod Gumpeni, M.D., pursuant to Article 49.25, Texas Code of Criminal Procedure, beginning at 9:25 a.m. on April 18, 2021.

EXTERNAL APPEARANCE: The body is that of a severely charred adult male of unknown age at the time of examination. The body is clad in a pair of loafers. Charred remnants of pants and a shirt accompany the body. A yellow metal watch encircles the left wrist. Harris County morgue identification bands encircle the right wrist and left ankle. A Harris County morgue tracking device encircles the left ankle.

The body weighs 164 pounds and is 63 inches in length. The charring of soft tissue precludes evaluation of rigor mortis, livor mortis, or facial features. A small amount of scalp remains with no identifiable hair. The eyes cannot be assessed due to extensive thermal injury. The oral cavity has natural dentition with extensive thermal changes. The neck is symmetrical. The external genitalia are consistent with those of an adult male.

IDENTIFYING MARKS AND SCARS: None are apparent.

EVIDENCE OF MEDICAL INTERVENTION: None.

EVIDENCE OF INJURY (THERMAL INJURIES AND SMOKE INHALATION): The remains are severely charred (approximately 90 percent of the total body surface area). The face, neck, chest, abdomen, and upper and lower extremities are consumed to the deep soft tissues and bone. The upper and lower extremities have a pugilistic posture. Small

P4
PM 8/24/2

patches of spared skin are on the left upper back, buttocks, and feet. The feet are not charred and show acral wrinkling and skin slippage.

The skull has multiple thermal fractures with exposure of the intact dura mater. Epidural blood is congealed within the cranial vault and the brain parenchyma has a rubbery texture.

The neck musculature, vasculature, thyroid, and larynx are exposed with thermal changes. Defects with charred, rolled edges are in the bilateral carotid arteries. Hemorrhage is in the soft tissue and musculature surrounding the posterior neck and right side of the proximal thoracic vertebrae.

The tongue mucosa, epiglottis, and laryngeal mucosa are erythematous and covered with dense soot. Soot, blood, and frothy fluid are in the larynx and trachea. The bronchi contain bloody fluid and soot. The proximal esophagus contains soot admixed with gastric contents and the mucosa is erythematous with focal erosion.

The right side of the rib cage is exposed with thermal injuries of the bone and intercostal muscles. There is extrusion of the peritoneal organs from the right abdominal wall. The small bowel has extensive thermal changes including transmural defects in multiple areas. The testes have thermal changes.

The distal phalanges of the right hand are absent. The distal radii and ulnae of the forearms are exposed and fractured. A paper bag accompanying the body contains a fragment of distal radius with thermal changes. The knee joints and right ankle joints are disarticulated.

EVIDENCE OF INJURY (BLUNT FORCE INJURIES): A linear fracture with sharp margins is on the right parietal bone; see REPORT OF ANTHROPOLOGY CONSULTATION. The soft tissue surrounding the atlanto-occipital joint is hemorrhagic with no associated dislocation or fracture. A linear fracture with sharp margins is seen *in situ* on the posterior lamina of the 7th cervical vertebra; see REPORT OF ANTHROPOLOGY CONSULTATION.

The anterolateral aspects of the left 8th and 9th ribs have incomplete fractures with surrounding contusions in the intercostal muscles. The right lobe of the liver has two

P2

RM 8/24/21

lacerations with surrounding parenchymal hemorrhage. The exposed abdominal cavity contains approximately 50 milliliters of residual blood.

The injuries, having been described once, will not be repeated.

INTERNAL EXAMINATION:

BODY CAVITIES: See EVIDENCE OF INJURY. No adhesions are in the pericardial, pleural, or abdominal cavities. All internal organs are in their normal anatomic positions.

HEAD (CENTRAL NERVOUS SYSTEM): See EVIDENCE OF INJURY. The dura and its reflections are intact. There is no subdural or subarachnoid hemorrhage. The brain weighs 1400 grams and has a normal shape and gyral pattern. The cerebral hemispheres are symmetrical. The structures at the base of the brain, including the cranial nerves, and blood vessels are intact. The cerebral arterial vasculature has no atherosclerosis or aneurysms. Coronal sections through the cerebral hemispheres reveal a 2.0 by 1.7 by 1.0 centimeter area of parenchymal hemorrhage in the left basal ganglia; see REPORT OF NEUROPATHOLOGY CONSULTATION. The cerebral ventricles are symmetrical and of normal caliber. Transverse sections through the cerebellar hemispheres, brainstem, and upper cervical spinal cord reveal no abnormalities.

NECK: See EVIDENCE OF INJURY. The anterior neck muscles have no hemorrhage. The tongue mucosa is intact with no hemorrhage in the musculature. The hyoid bone and thyroid and cricoid cartilages are intact. The epiglottis is thin with no edema. The atlanto-occipital articulation is stable. No cervical fractures are palpated.

CARDIOVASCULAR SYSTEM: The heart weighs 400 grams and has a smooth epicardial surface with a normal amount of epicardial fat. The coronary arteries have patent ostia and a right-dominant distribution. Yellow, eccentric, atherosclerotic plaques produce up to 20 percent stenoses of the left anterior descending and right coronary arteries. The left circumflex coronary artery is patent with no significant atherosclerosis. The myocardium is red-brown with no pallor, softening, or fibrosis. The atrial and ventricular septa are intact. The chambers of the heart are not dilated. The left ventricle wall, interventricular septum, and right ventricle wall are 1.0 centimeter, 1.0 centimeter, and 0.3 centimeter thick, respectively. The endocardial surfaces are smooth and without hemorrhage. The four cardiac valves are thin, freely mobile, and measure as follows: tricuspid valve 11.5 centimeters, pulmonic valve 6.0 centimeters,

PM 8/24/21

mitral valve 10.7 centimeters, and aortic valve 7.5 centimeters. The aorta and its major branches arise normally and have mild atherosclerosis. The venae cavae and their major tributaries return to the heart in their usual distribution and are free of thrombi.

RESPIRATORY SYSTEM: See EVIDENCE OF INJURY. The 1000 gram right lung and 610 gram left lung have normal lobation. The pleural surfaces are smooth and glistening. There is very minimal anthracosis. The pink-purple parenchyma has dependent congestion and edema with no masses, consolidation, or hemorrhage. The cut surfaces exude an abundant amount of foamy fluid. The pulmonary arterial vasculature have no thromboemboli or significant atherosclerosis.

HEPATOBILIARY SYSTEM: See EVIDENCE OF INJURY. The 2060 gram liver has a smooth, glistening capsule covering dark red-brown soft parenchyma with no visible or palpable fibrosis. The gallbladder contains 20 milliliters of green-brown, mucoid bile without stones. The mucosa is velvety and unremarkable. The extrahepatic biliary tree is patent and has no calculi.

GASTROINTESTINAL SYSTEM: See EVIDENCE OF INJURY. The esophagus is lined by tan-pink, smooth mucosa. The gastric mucosa exhibits the usual rugal folds and the lumen contains 700 milliliters of tan-green fluid admixed with partially digested food. The uninjured small intestine, colon, and appendix are unremarkable. The pancreas has a pink-tan lobulated appearance and the ducts are clear.

GENITOURINARY SYSTEM: See EVIDENCE OF INJURY. The 160 gram right kidney and 180 gram left kidney have smooth, thin, and semi-transparent capsules. The underlying cortical surfaces are smooth and red-brown. A 2.5 by 2.0 by 1.5 centimeter hemorrhagic and cystic cortical mass is in the lower pole of the right kidney. Otherwise, the cortices are sharply delineated from the medullary pyramids, which are red-purple and unremarkable. The calyces, pelves, and ureters are unremarkable.

The urinary bladder is markedly distended and contains 730 milliliters of clear yellow urine. The mucosa is pink-white and trabeculated. A 2.0 by 2.0 by 1.5 centimeter, tan-white, firm mass is in the prostate. The seminal vesicles are unremarkable.

RETICULOENDOTHELIAL SYSTEM: The 230 gram spleen has a smooth, intact capsule covering dark red-purple, moderately firm parenchyma. The white pulp is unremarkable. The lymph nodes are not enlarged.

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ENDOCRINE SYSTEM: The thyroid gland has a normal shape and size with uniform, red-brown, rubbery parenchyma. The parathyroid glands are inconspicuous. The adrenal glands have golden-yellow uniformly thin cortices and thin gray medullae.

MUSCULOSKELETAL SYSTEM: See EVIDENCE OF INJURY. The vertebrae, clavicle, sternum, ribs, and pelvis are normally developed. The musculature is normally distributed. The diaphragm is intact.

RADIOGRAPHS: Anteroposterior and lateral radiographs are performed.

TOXICOLOGY: Blood, urine, bile, and liver are submitted to the HCIFS Toxicology Lab. Samples of brain, spleen, kidney, muscle, and lung are submitted to the Federal Aviation Administration Civil Aerospace Medical Institute (FAA CAMI) Toxicology Lab.

HISTOLOGY: The following sections are submitted: Cassette A - heart; cassette B - right lung; cassette C - left lung; cassette D - liver and kidneys; cassette E - cervical spinal cord and trachea; cassette F - N - brain.

PATHOLOGICAL FINDINGS

I. Thermal injuries and smoke inhalation
   A. Extensive charring and fourth-degree burns
      1. 90 percent total body surface area
   B. Thermal contracture of the upper and lower extremities
   C. Extensive skeletal thermal fractures
   D. Thermal injuries of viscera
   E. Carboxyhemoglobin saturation:
      1. 35 percent detected in postmortem blood (FAA CAMI Toxicology Report)
      2. 40 percent detected in postmortem blood; see TOXICOLOGY REPORT
   F. Cyanide (0.83 mcg/mL) detected in postmortem blood; see NMS TOXICOLOGY REPORT
   G. Soot in respiratory tract and esophagus (autopsy, microscopic)
II. Blunt force injuries
   A. Right parietal bone fracture

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RM 8/24/21

B. Focal acute subarachnoid hemorrhage (see REPORT OF NEUROPATHOLOGY CONSULTATION)
C. C7 vertebral fracture
D. Left rib fractures
E. Liver lacerations
F. Hemoperitoneum (approximately 50 milliliters of residual blood)

III. Postmortem toxicology
A. Ethanol:
1. Ethanol detected in postmortem blood (0.151g/100mL) and liver (0.119g/100mL) (FAA CAMI Toxicology Report)
2. Ethanol detected in postmortem blood (0.173g/100mL) and urine (0.157g/100mL); see TOXICOLOGY REPORT
3. Pulmonary edema (1610 grams combined lung weight)
4. Urinary retention (730 milliliters)
B. Cetirizine, citalopram, and N-desmethylcitalopram (citalopram) metabolite detected in postmortem blood and liver (FAA CAMI Toxicology Report)
C. Chlorpheniramine detected in postmortem blood (FAA CAMI Toxicology Report)
1. Chlorpheniramine (22 ng/mL) detected in postmortem blood; see NMS TOXICOLOGY REPORT
D. Citalopram detected in postmortem blood; see TOXICOLOGY REPORT

IV. Additional findings
A. Acute intracerebral hemorrhage, left inferolateral putamen and nucleus accumbens
1. Etiology unclear (see REPORT OF NEUROPATHOLOGY CONSULTATION)
B. Hypertensive and atherosclerotic cardiovascular disease
1. Cerebrovascular hypertensive arteriopathy (see REPORT OF NEUROPATHOLOGY CONSULTATION)
2. Cardiomegaly (400 grams) with myocyte hypertrophy and myocardial fibrosis
3. Mild coronary atherosclerosis
4. Mild aortic atherosclerosis
5. Nephroarteriosclerosis
C. Clear cell renal cell carcinoma, right kidney
D. Hepatic steatosis
E. Prostate mass

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8/24/21

HARRIS COUNTY INSTITUTE OF FORENSIC SCIENCES
1861 OLD SPANISH TRAIL
HOUSTON, TEXAS 77054

Paulyann Maclayton, M.D.
Forensic Pathology Fellow

ML21-1741

MICROSCOPIC EXAMINATION

15 H&E-stained slides are reviewed.

HEART - Hypertrophic myocytes; mural arteriosclerosis; perivascular and focal interstitial fibrosis

LUNGS - Minimal peribronchial anthracotic pigment deposition; intra-alveolar hemorrhage; edema; pleura with thermal artifact

LIVER - Moderate macrovesicular steatosis

KIDNEYS - Right kidney with well-circumscribed neoplasm consisting of cells with clear and eosinophilic cytoplasm arranged in nests, surrounded by branching fibrovascular septations and cystic change, consistent with clear cell renal cell carcinoma. Adjacent renal parenchyma with characteristic hypertensive renovascular disease changes, including sclerotic glomeruli, marked chronic inflammation, and thyroidization. The left kidney has no significant histopathologic abnormality.

CERVICAL SPINAL CORD - See REPORT OF NEUROPATHOLOGY CONSULTATION

TRACHEA - Abundant black granular pigment deposition on mucosal surface

BRAIN - See REPORT OF NEUROPATHOLOGY CONSULTATION

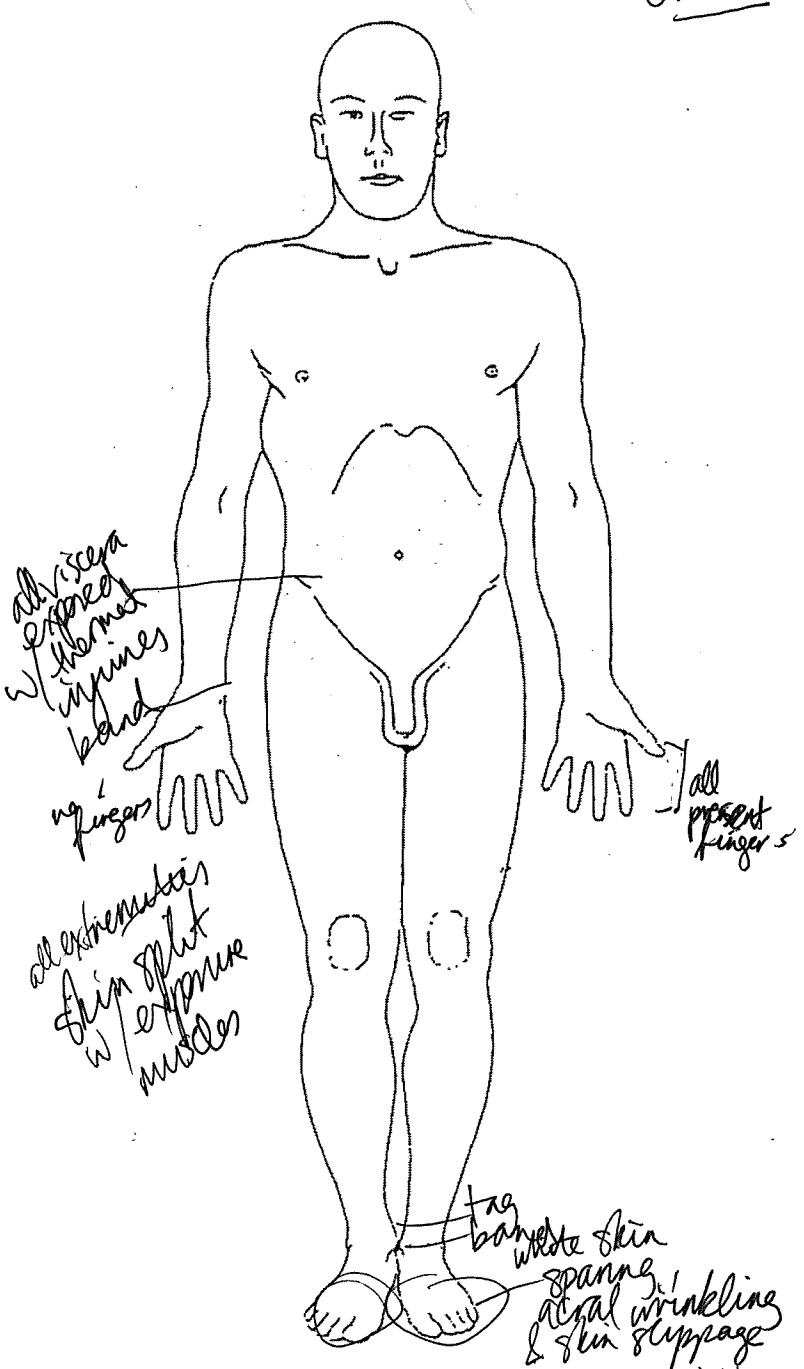
Paulyann Maclayton 8/24/21

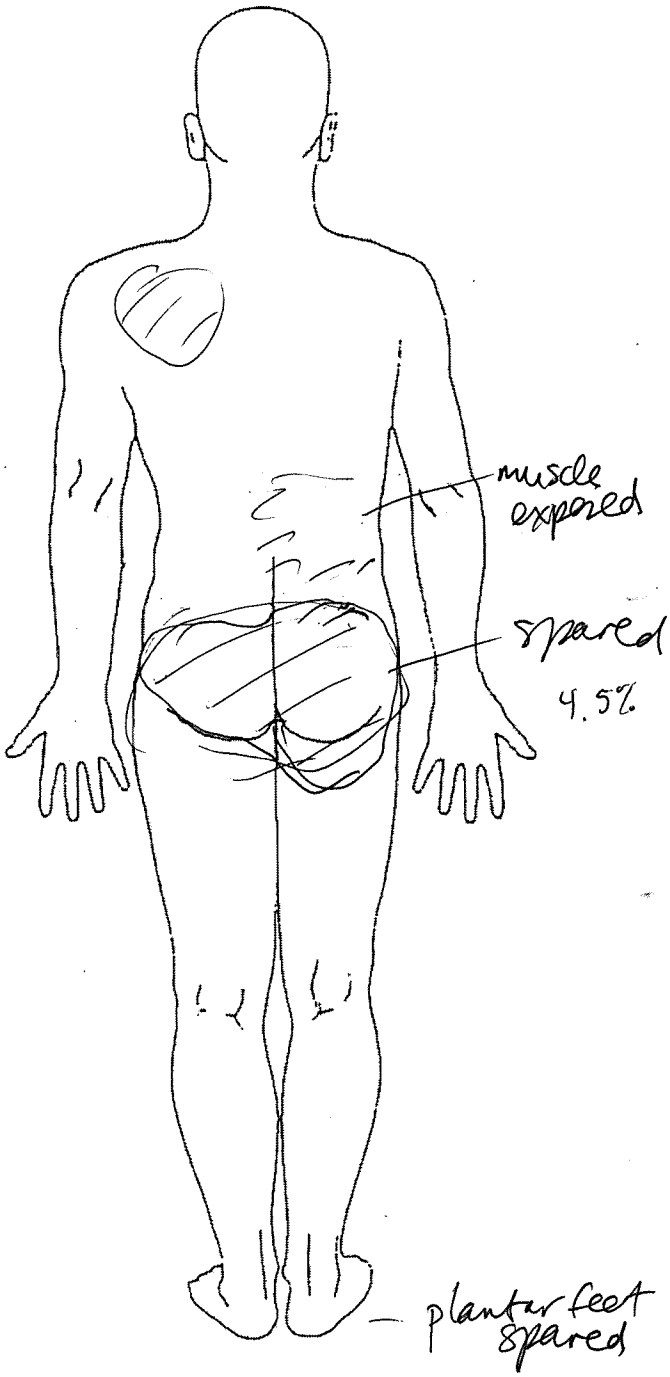
Paulyann Maclayton, M.D. MMDDYY
Forensic Pathology Fellow

Harris County Institute of Forensic Sciences

Case Number: ML21-1741		Page: 1 of 2	
Decedent's Name: Unknown	Length: 63	Weight: 164	
Examiner: MacLayton / Gumpeni	Date: 4/18/21	Time: 9:25am	

charred



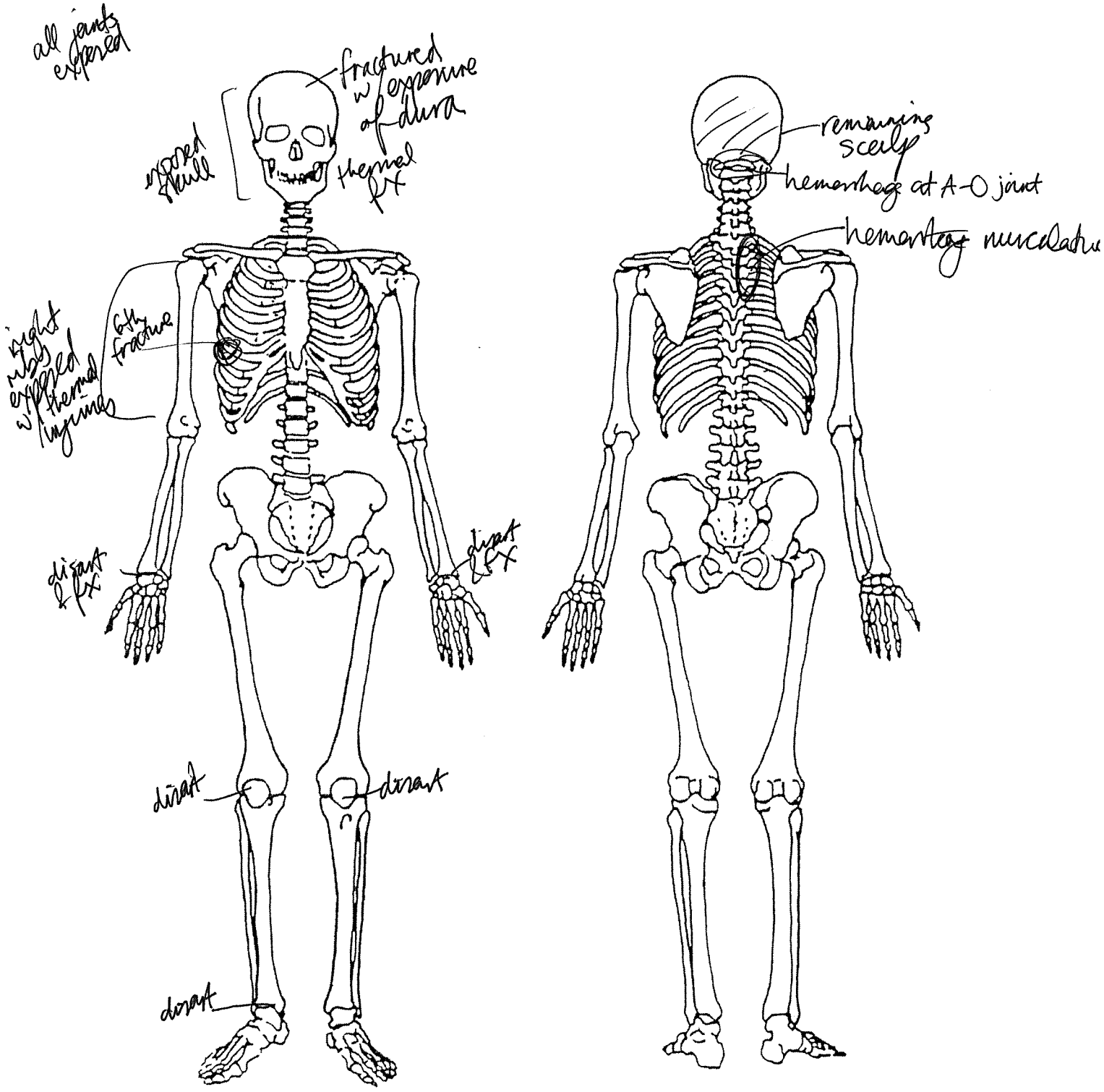


Clothing: loafers, piece of pants leg on right thigh
in bag; piece of shirt.
left wrist - yellow metal watch

paper bag;

Section: Pathology	Authorized by: DA Wolf
Form Title: Autopsy Diagram – Adult Male, Front/ Back	Form No.: PAT.001
Rev.:	Rev. date: 11/5/13

Harris County Institute of Forensic Sciences			
Case Number: ML21-1741	Decedent's Name: Unknown		
Examiner: MacLaughlin / Gumpeni	Date: 4/18/21	Page: 2 of 2	



Section: Pathology	Authorized by: DA Wolf
Form Title: Autopsy Diagram - skeleton, front and back	Form No.: PAT.023
Rev.:	Rev. date: 11/5/13

HARRIS COUNTY INSTITUTE OF FORENSIC SCIENCES

1861 Old Spanish Trail
Houston, TX 77054-2001
Phone: 832-927-5005 FAX: 832-927-2876

TOXICOLOGY REPORT

June 30, 2021

LABORATORY NUMBER: ML21-1741
SERVICE REQUEST: 0001

Deceased: WILLIAM VARNER

Submitted By:

Paulyann Maclayton, M.D.
Forensic Pathology Fellow
Harris County Institute of Forensic Sciences
1861 Old Spanish Trail
Houston, TX 77054

Submission Date: April 18, 2021

RESULTS:

001-A - Blood (heart)

Analyte	Result	Analytical Method	Analyst
Ethanol	0.173 ± 0.026 g/100mL	Headspace GC/FID	L. Leon
Citalopram	0.13 ± 0.03 mg/L	LC/MS/MS	F. Chavez

001-B - Blood (heart)

Analyte	Result	Analytical Method	Analyst
Carboxyhemoglobin	40 ± 7 % saturation	Spectrophotometry	J. Sandoval
Chlorpheniramine	Presumptive positive - Confirmation not performed	GC/MS	K. Cooper
Citalopram	Present	GC/MS	K. Cooper
Desmethylcitalopram	Presumptive positive - Confirmation not performed	GC/MS	K. Cooper

001-F - Urine

Analyte	Result	Analytical Method	Analyst
Ethanol	0.157 ± 0.024 g/100mL	Headspace GC/FID	L. Leon

001-A - Blood (heart)

Analyte	Result	Analytical Method	Analyst
Acetone	None Detected	Headspace GC/FID	L. Leon
Isopropanol	None Detected	Headspace GC/FID	L. Leon
Methanol	None Detected	Headspace GC/FID	L. Leon
9-Hydroxyrisperidone	None Detected	LC/MS/MS	F. Chavez
Amitriptyline	None Detected	LC/MS/MS	F. Chavez

Medical Examiner's Initials and Date PM 6/30/21

All testing is accredited by the Texas Forensic Science Commission and by the laboratory's ISO/IEC 17025 and American Board of Forensic Toxicology accreditation issued by the ANSI National Accreditation Board.
Refer to certificate and scope of accreditation FT-0076.

B

We welcome your feedback at http://ifs.harriscountytx.gov/Pages/CrimeLaboratoryService.aspx

LABORATORY NUMBER: ML21-1741 **DATE: June 30, 2021**

SERVICE REQUEST: 0001

001-A - Blood (heart)

Analyte	Result	Analytical Method	Analyst
Aripiprazole	None Detected	LC/MS/MS	F. Chavez
Benztropine	None Detected	LC/MS/MS	F. Chavez
Clomipramine	None Detected	LC/MS/MS	F. Chavez
Clozapine	None Detected	LC/MS/MS	F. Chavez
Cyclobenzaprine	None Detected	LC/MS/MS	F. Chavez
Desipramine	None Detected	LC/MS/MS	F. Chavez
Doxepin	None Detected	LC/MS/MS	F. Chavez
Duloxetine	None Detected	LC/MS/MS	F. Chavez
Fluoxetine	None Detected	LC/MS/MS	F. Chavez
Haloperidol	None Detected	LC/MS/MS	F. Chavez
Hydroxyzine	None Detected	LC/MS/MS	F. Chavez
Imipramine	None Detected	LC/MS/MS	F. Chavez
Loxapine	None Detected	LC/MS/MS	F. Chavez
Milnacipran	None Detected	LC/MS/MS	F. Chavez
Mirtazapine	None Detected	LC/MS/MS	F. Chavez
N-Desmethylclomipramine	None Detected	LC/MS/MS	F. Chavez
N-Desmethylcyclobenzaprine	None Detected	LC/MS/MS	F. Chavez
N-Desmethyltrimipramine	None Detected	LC/MS/MS	F. Chavez
Nordoxepin	None Detected	LC/MS/MS	F. Chavez
Norfluoxetine	None Detected	LC/MS/MS	F. Chavez
Norquetiapine	None Detected	LC/MS/MS	F. Chavez
Norsertraline	None Detected	LC/MS/MS	F. Chavez
Nortriptyline	None Detected	LC/MS/MS	F. Chavez
O-Desmethylvenlafaxine	None Detected	LC/MS/MS	F. Chavez
Paroxetine	None Detected	LC/MS/MS	F. Chavez
Quetiapine	None Detected	LC/MS/MS	F. Chavez
Risperidone	None Detected	LC/MS/MS	F. Chavez
Sertraline	None Detected	LC/MS/MS	F. Chavez
Trimipramine	None Detected	LC/MS/MS	F. Chavez
Venlafaxine	None Detected	LC/MS/MS	F. Chavez
Ziprasidone	None Detected	LC/MS/MS	F. Chavez

Medical Examiner's Initials and Date PM 6/30/21

B

LABORATORY NUMBER: ML21-1741 **DATE: June 30, 2021**

SERVICE REQUEST: 0001

001-B - Blood (heart)

Analyte	Result	Analytical Method	Analyst
Amphetamine / MDA	None Detected	Immunoassay - ELISA	B. Harrell
Benzodiazepines	None Detected	Immunoassay - ELISA	B. Harrell
Benzoylecgonine	None Detected	Immunoassay - ELISA	B. Harrell
Carisoprodol	None Detected	Immunoassay - ELISA	B. Harrell
Fentanyl	None Detected	Immunoassay - ELISA	B. Harrell
Methamphetamine / MDMA	None Detected	Immunoassay - ELISA	B. Harrell
Opiates	None Detected	Immunoassay - ELISA	B. Harrell
Oxycodone	None Detected	Immunoassay - ELISA	B. Harrell
Phencyclidine	None Detected	Immunoassay - ELISA	B. Harrell
Methadone	None Detected	Immunoassay - ELISA	T. Nguyen
Other Standard Basic Drugs	None Detected	GC/MS	K. Cooper

001-F - Urine

Analyte	Result	Analytical Method	Analyst
Acetone	None Detected	Headspace GC/FID	L. Leon
Isopropanol	None Detected	Headspace GC/FID	L. Leon
Methanol	None Detected	Headspace GC/FID	L. Leon

Uncertainty of Measurement: The uncertainty value for ethanol represents an expanded uncertainty expressed at the 99.73% level of confidence. The uncertainty values for all other analytes represent an expanded uncertainty expressed at the 95.45% level of confidence.

Only those items listed in the results section were tested.

OUTSOURCED TESTING

Blood (heart) was sent to NMS Labs on 04/22/21 for cyanide analysis. Confirmation testing for chlorpheniramine was added on 05/13/21.

The results will be delivered directly to the case pathologist.

Evidence Disposition: All items will be retained by the laboratory for at least one year following the issuance of an original Toxicology Report.

Patricia Small, B.S., MT(ASCP), D-ABFT-FT
Case Reviewer
Toxicologist 2
June 29, 2021

Teresa Gray, Ph.D., F-ABFT
Expert Reviewer
Director, Forensic Toxicology
June 30, 2021

Medical Examiner's Initials and Date PM 6/30/21

All testing is accredited by the Texas Forensic Science Commission and by the laboratory's ISO/IEC 17025 and American Board of Forensic Toxicology accreditation issued by the ANSI National Accreditation Board.
Refer to certificate and scope of accreditation FT-0076.

B

We welcome your feedback at http://ifs.harriscountytx.gov/Pages/CrimeLaboratoryService.aspx

NMS Labs
200 Welsh Road, Horsham, PA 19044-2208
Phone: (215) 657-4900 Fax: (215) 657-2972
e-mail: nms@nmslabs.com
Robert A. Middleberg, PhD, F-ABFT, DABCC-TC, Laboratory Director

CONFIDENTIAL

Supplemental Report

Report Issued 05/31/2021 12:00
Last Report Issued 04/30/2021 07:01

To: **98574**
Harris County Institute of Forensic Sciences
Attn: Toxicology Department
1861 Old Spanish Trail
Houston, TX 77054

Patient Name VARNER, WILLIAM
Patient ID ML21-1741
Chain 21138486
Age 59 Y **DOB** 02/05/1962
Gender Male
Workorder 21138486

Positive Findings:

Compound	Result	Units	Matrix Source
Chlorpheniramine	**22**	**ng/mL**	**001 - Heart Blood**
Cyanide	**0.83**	**mcg/mL**	**001 - Heart Blood**

See Detailed Findings section for additional information

Testing Requested:

Analysis Code	Description
1190B	Chlorpheniramine, Blood
1380B	Cyanide, Blood

Specimens Received:

ID	Tube/Container	Volume/ Mass	Collection Date/Time	Matrix Source	Labeled As
001	Red Top Tube	0.75 mL	Not Given	Heart Blood	ML21-1741

All sample volumes/weights are approximations.
Specimens received on 04/23/2021.

Detailed Findings:

Analysis and Comments	Result	Units	Rpt. Limit	Specimen Source	Analysis By
Chlorpheniramine	22	ng/mL	10	001 - Heart Blood	LC-MS/MS
Cyanide	0.83	mcg/mL	0.050	001 - Heart Blood	LC-MS/MS

Other than the above findings, examination of the specimen(s) submitted did not reveal any positive findings of toxicological significance by procedures outlined in the accompanying Analysis Summary.

Reference Comments:

1. Chlorpheniramine (Chlor-Trimeton®) - Heart Blood:

   Chlorpheniramine is a potent antihistamine that has been used alone and in combination with other cold symptom relief medications, both prescribed and sold over-the-counter. It may also be provided by injection or as a nasal spray. Oral doses usually range from 4 to 12 mg with both normal and controlled release formulations available.
   Peak concentrations of 10 ng/mL chlorpheniramine were obtained 3 hours following single oral administration of 8 mg. Toxic effects have been reported in adults at concentrations greater than 400 ng/mL (serum) and in infants at concentrations above 65 ng/mL (postmortem blood). The blood to plasma ratio of chlorpheniramine is approximately 1.2.
   Common adverse effects include sedation, dizziness, nausea and dry mouth. Signs and symptoms of acute chlorpheniramine toxicity include tremor, seizures, disorientation, loss of consciousness, fever, respiratory depression and cardiac arrhythmias.

2. Cyanide (CN; Hydrogen Cyanide; Potassium Cyanide) - Heart Blood:

   Cyanide is a potent, rapidly acting lethal poison. Common sources include industrial manufacturing by-products, plants, fruit pits, chemicals and combustion products of certain plastics. Because of the latter, cyanide may play a role in the hypoxic events from fires. Its toxic effects are exerted via inhibition of aerobic metabolism, i.e., an inability to effectively use oxygen.

   Endogenous whole blood cyanide concentrations for non-smokers are reported to approximate 0.02 mcg/mL. In smokers, blood concentrations may increase to 0.04 mcg/mL. Individuals on nitroprusside therapy for high blood pressure may also have elevated levels of cyanide (0.05 - 0.5 mcg/mL).

   Blood concentrations of cyanide can increase or decrease during storage depending on the length of time, the temperature and the presence of cyanogenic bacteria (bacteria that form cyanide as a by-product of metabolism).

   In general, individuals with blood cyanide levels lower than 0.2 mcg/mL are asymptomatic; between 0.5 and 1.0 mcg/mL, signs of toxicity may be noted, e.g., flushing and tachycardia. At higher concentrations (1.0 - 2.5 mcg/mL) stupor and coma may appear with death at concentrations exceeding 2.5 mcg/mL.

   Concentrations found in fire victims ranged from 0.17 - 2.2 mcg/mL. Average concentrations reported in two studies of 49 fatal cases ranged from 0.4 - 230 mcg/mL (average 38 mcg/mL).

Chain of custody documentation has been maintained for the analyses performed by NMS Labs.

Unless alternate arrangements are made by you, the remainder of the submitted specimens will be discarded six (6) weeks from the date of this report; and generated data will be discarded five (5) years from the date the analyses were performed.

Analysis Summary and Reporting Limits:

All of the following tests were performed for this case. For each test, the compounds listed were included in the scope. The Reporting Limit listed for each compound represents the lowest concentration of the compound that will be reported as being positive. If the compound is listed as None Detected, it is not present above the Reporting Limit. Please refer to the Positive Findings section of the report for those compounds that were identified as being present.

Acode 1190B - Chlorpheniramine, Blood - Heart Blood

-Analysis by High Performance Liquid Chromatography/ Tandem Mass Spectrometry (LC-MS/MS) for:

Compound	Rpt. Limit	Compound	Rpt. Limit
Chlorpheniramine	10 ng/mL		

Acode 1380B - Cyanide, Blood - Heart Blood

-Analysis by High Performance Liquid Chromatography/ Tandem Mass Spectrometry (LC-MS/MS) for:

Compound	Rpt. Limit	Compound	Rpt. Limit
Cyanide	0.050 mcg/mL		

RM

HARRIS COUNTY INSTITUTE OF FORENSIC SCIENCES
1861 OLD SPANISH TRAIL
HOUSTON, TEXAS 77054-2098

Jason M Wiersema, Ph.D., D-ABFA
Forensic Anthropology Director

ML21-1741

REPORT OF ANTHROPOLOGY CONSULTATION

CASE NUMBER:	ML21-1741
NAME:	WILLIAM VARNER
PATHOLOGIST:	Paulyann Maclayton, MD; Pramod Gumpeni, MD
ANALYSIS COMPLETED:	June 10, 2021

On April 18, 2021, Dr. Maclayton, Forensic Pathology Fellow, under the supervision of Dr. Gumpeni, Assistant Deputy Chief Medical Examiner, requested an *in situ* trauma examination of the charred splanchnocranium, neurocranium and posterior cervical spine of ML21-1741, a 59 year-old male. A segment of the posterior cervical spine was retained by the pathologist. The vertebral specimen was retrieved from Evidence and transferred to the Forensic Anthropology Laboratory for examination. The specimen was chemically processed, examined grossly and via stereomicroscope and photographed. It will be archived in the Forensic Anthropology Evidence Storage Room.

Findings, and Interpretation

Both the neurocranium and splanchnocranium are heavily fragmented. Interpretation of the fragmentation and patterns of fracture is complicated by significant postmortem thermal damage over the anterior three-quarters of the cranium. A linear fracture is visible on an unburned segment of the endocranial surface of the right parietal bone. The fracture is also visible ectocranially and extends posteriorly from a large defect that encompasses the anterior right parietal, and most of the frontal bone. The margins of the fracture are sharp. The morphology of the fracture is consistent with blunt trauma

at or near the time of death, but its confluence with thermally damaged bone precludes specific interpretation of the location of the blunt impact.

There are multiple fractures noted on the splanchnocranium, including the right zygomatic bone and mandible. Postmortem thermal damage cannot be excluded as the mechanism for the fractures. There is considerable damage to the left side of the splanchnocranium, especially the margins of the left orbit, the left maxilla and zygomatic, exposing the frontal and left maxillary sinuses. Postmortem thermal damage cannot be excluded as the mechanism for this damage.

During the *in situ* examination, a linear fracture with sharp margins was noted on the lamina of an indeterminate cervical vertebra. Fractures at this location can result from hyperextension/hyperflexion, shearing or rotational forces. No fractures are present on the retained vertebral specimens post processing.

Summary

A linear fracture is present on the posterior right parietal of ML21-1741. The fracture is consistent with at least one blunt impact to an indeterminate region of the cranium at or near the time of death. Significant thermal damage precludes more detailed interpretation of the fracture. Significant fragmentation is present on the bones of the splanchnocranium and the neurocranium, but the degree of thermal damage precludes reliable interpretation of fracture/fragmentation. A fracture, consistent with hyperflexion/hyperextension, shearing and/or rotation of the neck, was visible *in situ* on the posterior lamina of an indeterminate cervical vertebra.

6/18/21

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ML21-1741

REPORT OF NEUROPATHOLOGY CONSULTATION

CASE NUMBER: ML21-1741
NAME: William Varner
PATHOLOGIST: Paulyann. Maclayton, MD; Pramod Gumpeni, MD
ANALYSIS COMPLETED: 4/15/21

GROSS EXAMINATION: not performed. Postmortem photographs are reviewed.

MICROSCOPIC EXAMINATION: The cervical spinal cord is histologically unremarkable and cytoarchitecture is preserved. Many sections of cerebral cortex have mildly to moderately thickened and fibrotic leptomeninges with scattered hemosiderin-laden macrophages and free hemosiderin in the subararchnoid space. These hemosiderin-laden macrophages are also present in Virchow-Robin spaces, mostly within the basal ganglia. Permeating arterial vasculature of the basal ganglia, leptomeninges and white matter and hyalinized and thickened, consistent with hypertensive arteriopathy. Acute intraparenchymal hemorrhages are noted in the white matter and adjacent basal ganglia. No definite neuronal ischemic damage is present. Acute subarachnoid hemorrhage is also confirmed focally. Some obscuration of the leptomeningeal histology is distorted by thermal artifact. The adjacent cortical surfaces are intact, without recent or remote hemorrhage, cavitation, gliosis or hemosiderin staining. Subependymal and subpial mineralization with corpora amylacea is abundant.

DIAGNOSES:

1. **Thermal artifact and damage to the superficial brain and convexity leptomeninges**

2. **Acute intraparenchymal hemorrhage of the left inferolateral putamen and nucleus accumbens (see comment)**
3. **Leptomeningeal fibrosis, hemosiderin, and hemosiderin-laden macrophages, consistent with organized remote subarachnoid hemorrhage**
4. **Focal acute subarachnoid hemorrhage**
5. **Diffuse moderate cerebral edema**
6. **Mild to moderate cerebral arterial hyaline thickening, consistent with hypertensive arteriopathy**

Comment: The acute hemorrhage into the left putamen and accumbens area is unusual and not diagnostic of a particular entity. Possibilities include an asymmetric reaction to carbon monoxide poisoning, hypertensive hemorrhage, and acute traumatic accelerating/decelerating injury.

The etiology of the leptomeningeal fibrosis and hemosiderin staining is not apparent, and is not associated with prior/remote contusional injury.

8/5/24

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