

Name: Begay, Asiah

Date of Birth: 8/05/2014 Age: 4 years

Date and Time of Death: 10/20/2018 at 1310 hrs

Date, Time and Place of Autopsy: 10/23/2018; 0900 hrs; Hood Mortuary, Durango, CO

Prosecutor: Michael Arnall, M.D.

Autopsy Report Number: MA18-104

Investigation Number: CC18-107

Assistant: Jann Smith

OPINION

Diagnoses:

- I. History of head trauma associated with syncopal episode in shower, hospitalization, 4mm x 4mm x 2mm organizing subdural hematoma, ischemic brain changes, head, left posterior and right temporal scalp contusions, contusion on right and middle forehead, spinal nerve root hemorrhages, hemosiderin negative
- II. Lung, pus in right lung, abnormal chest CT on admission
- III. Heart, 2 minute lymphoid aggregates

Toxicology:

Blood Morphine- Free-	190 ng/ml
Blood Fentanyl-	5.0 ng/ml
Blood Norfentanyl-	0.53 ng/ml

Cause of Death: **Undetermined**

Manner of Death: **Undetermined**

Comment: The subdural hematoma that is present measures 4mm x 4mm x 2mm; quite small and appears to significantly predate hospital admission. The spinal nerve root ganglion injuries appear to have occurred after hospital admission. The myocardial lymphoid aggregates and pneumonia suggest a possible viral infection.



Michael Arnall, M.D.

Date

7-30-2019

GROSS EXAMINATION

An autopsy was performed on the body of Asiah Begay at the Hood Mortuary in Durango, Colorado on October 23, 2018. The autopsy was authorized by the Coroner of La Plata County. Prosecuting was Michael Arnall, M.D. and assisting was Jann Smith.

EXTERNAL EXAMINATION:

The decedent is a well-developed, well nourished, Native American female whose appearance is compatible with the stated age of 4 years. The body, which is clothed in a disposable diaper, purple pants and a green hospital top when first examined, measures 44 inches in height. Rigor is fully developed and posterior lividity is fixed. The scalp hair is 14 inches long and black in color. The conjunctivae are pale. The pupils are 5 millimeters, round, equal and central. The irides are brown.

The ears, nose, and lips are without congenital defects. The frenulum is torn in a 4mm area. On the upper lip midline is 4x1 mm area of erythema. The lingual surfaces of the lips are unremarkable. The mouth demonstrates good dentition. The neck demonstrates no congenital defects. The chest and breasts are symmetric. The abdomen shows no congenital abnormalities. The external genitalia, anus and perineum are unremarkable for a 4 year old female. The extremities are symmetric without congenital abnormalities. The fingernails are intact. The back demonstrates no congenital defects.

EVIDENCE OF INJURIES:

On the bridge of the nose is a 3mm crusted abrasion. On the right forehead is a 1.9 cm crusted abrasion. On the right superior iliac crest is a 1 cm blue contusion. On the right medial knee is a 4x3 cm red purple contusion. On the right lower leg are two 2cm blue contusions. On the right lateral malleolus is a 2x5mm abrasion. On the left lateral malleolus is a 5mm abrasion. On the left foot is 1cm blue contusion. On the left lower leg is a 1 cm blue contusion. On the left medial knee is a 4x4cm red contusion. On the left anterior superior iliac crest is a 8x8 cm red purple contusion. On the upper back in the midline is a 6x4 cm purple contusion. Under a decubitus pad on the back is a 8x7mm abrasion, a 2.5x0.9 cm abrasion, 3mm contusion, a 6mm blue contusion, a 2x1.3cm abrasion, a 5mm abrasion and a 6 mm abrasion. On the bilateral posterior superior iliac crests are 5mm blue contusions. On the left upper leg is a dark discoloration. On the left lower leg are two 5mm blue contusions. On the forehead about the hairline in the midline is a 5mm abrasion eschar. On left lateral canthus are a 2x0.1 cm abrasion and a 3mm area of erythema. On the left cheek is a 5mm area of erythema. On the left chin is 8mm abrasion. Posterior to the left ear is a 6cm purple contusion. Erythema is present on the superior left ear. Hypo pigmentation from a healing burn is present on the left index and middle fingers. Hypo pigmentation and hyper pigmentation from a healing burn is present on the index, middle and ring fingers of the right hand.

EVIDENCE OF THERAPY:

Intravenous catheters are present in the bilateral antecubital fossa, right upper arm and left wrist. Needles punctures are present in the right wrist. On the back is a decubitus pad.

IDENTIFYING MARKS AND SCARS:

An identification tag around the right wrist identifies this as the body of Asiah Begay. On the left foot is a 5mm scar. On the left shoulder is a 3.2x3.5 cm pale loss of pigmentation scar, a 2x4cm loss of pigment scar and 3.2x0.1 cm scar. On the right wrist is a 5mm scar.

INTERNAL EXAMINATION:

Body Cavities: The thoracic and abdominal organs are normally oriented and related. The left pleural cavity, right pleural cavity and pericardial sac contain no excess fluid. The peritoneal cavity contains cloudy fluid.

Head: The brain weighs 1370 grams. The scalp has left posterior and right temporal contusion. The galea aponeurotica has no injuries. The skull has no abnormalities. The vault and base of skull have no abnormalities. The dura is remarkable for a right parietal 4mm x 4mm x 2mm organizing hematoma.

The cerebral hemispheres, sulci and gyri and the surface of the brain show no abnormalities. The epidural space shows no blood. The subdural space shows blood in a 4 mm x 4 mm x 2 mm area of the right parietal lobe. The subarachnoid space shows no blood. The cranial nerves and vertebral arteries are unremarkable.

Sections through the cerebral hemispheres, brain stem, and cerebellum, underlying cerebral cortex, subcortical and deep white matter, and the basal ganglia in each hemisphere show no abnormalities. The cerebral ventricles are unremarkable.

Neck: Examination of the soft tissues of the neck demonstrates a contusion 4-inches below the left ear. The hyoid bone and laryngeal cartilages have no fractures. The cervical vertebral bodies have no abnormalities. The tongue is unremarkable.

Cardiovascular System: The intimal surface of the thoracic and abdominal aorta is smooth. The aorta and its major branches and the great veins are oriented normally. The heart weighs 35 grams. The pericardium and epicardium are smooth and glistening. The atria are unremarkable. The foramen ovale is closed. The coronary arterial system appears right dominant.

Serial cross sections of coronary arteries demonstrate no atherosclerotic plaque. The atrial and ventricular septae are intact. The valve leaflets are thin and pliable. The myocardium is dark reddish brown, firm and cross sections are unremarkable.

Respiratory System: The upper airway contains no foreign material. The laryngeal mucosa is tan and smooth. The right and left lungs weigh 137 and 68 grams respectively. The pleural surfaces are smooth and glistening. The pulmonary arteries are patent. The major bronchi contain no foreign material. Sections of the lungs disclose no mass lesions or areas of consolidation. Pus is present in the right lung.

Liver and Biliary System: The liver weighs 630 grams. The capsule is thin. The cut surfaces are red and congested. Cut sections reveal no evidence of cirrhosis or mass lesions. The gallbladder is unremarkable. No stones are observed grossly.

Digestive System: The esophageal mucosa is unremarkable. The stomach and duodenum have no chronic ulcers. The stomach contains minimal fluid. The large and small intestines are unremarkable. The mucosal folds appear unremarkable. The appendix is present and appears unremarkable. The pancreas sections appear unremarkable. No mass lesions are identified.

Genitourinary System: The right and left kidneys weigh 33 and 54 grams respectively. The cortical surfaces are smooth. The cut surfaces are congested. No evidence of stones is identified. The ureters have no dilatation. The urinary bladder contains minimal clear yellow urine. The cross sections of the uterus, ovaries and fallopian tubes are unremarkable.

Endocrine System: The thyroid gland and adrenal glands are unremarkable.

Reticuloendothelial System: The 87 gram spleen has a smooth capsule and a dark red cut surface. The regional lymph nodes are unremarkable. The thymus is present.

Musculoskeletal System: The clavicles, sternum, spine and pelvis are unremarkable. The vertebrae have no abnormalities. The left posterior 4th rib is fractured. The musculature demonstrates no hemorrhage.

MICROSCOPIC EXAMINATION

A: lung, right lower lobe: sections demonstrate alveoli and bronchioles that are filled with neutrophils

B: lung, right lobe, myocardium: the section of myocardium appears to have minute lymphoid aggregates. The section of lung demonstrates neutrophils in some alveoli.

C: heart, intraventricular septum: no pathologic alterations

D: heart, sinoatrial node and right ventricle: sections demonstrate myocardium with two small focal lymphoid aggregates

E: skin, right forehead: subcutaneous extravasation of erythrocytes is present without evidence of inflammation or hemosiderin laden macrophages

F: skin, middle forehead: subcutaneous extravasation of erythrocytes is present without evidence of inflammation or hemosiderin laden macrophages

G: skin, scalp, behind left ear: subcutaneous extravasation of erythrocytes is present without evidence of inflammation or hemosiderin laden macrophages

H: scalp posterior to right ear: subcutaneous extravasation of erythrocytes is present without evidence of inflammation or hemosiderin laden macrophages

I: scalp, occiput: subcutaneous extravasation of erythrocytes is present without evidence of inflammation or hemosiderin laden macrophages

J: dura, right parietal, 5 mm subdural hematoma: an organized subdural hematoma is present. Numerous hemosiderin laden macrophages are present. Capillary proliferation within the organizing subdural hematoma is seen. Multiple fibroblast layers are present. In some areas greater than 10 fibroblast layers are seen. Acute extravasation of erythrocytes is present focally.

K: liver, kidney, heart, spleen: no pathologic alterations

L: frenulum: focal extravasation of erythrocytes is present beneath the stratified squamous epithelium. Mild acute inflammation is seen. Hemosiderin laden macrophages are not observed on H&E staining.

M: muscle, left trapezius: acute extravasation of erythrocytes is present within the muscle. H and E staining does not reveal hemosiderin laden macrophages. Inflammation does not appear to be present.

N: skin, sacrum: acute extravasation of erythrocytes in the subcutaneous adipose tissue appears negative for hemosiderin laden macrophages and inflammation.

O: skin, upper thoracic posterior midline: acute extravasation of erythrocytes in the subcutaneous adipose tissue and deep dermis appears negative for hemosiderin laden macrophages and inflammation.

P: skin, abrasion, lower thoracic midline: focal hyperkeratosis and parakeratosis are present. Negative for hemorrhage.

Q: skin, right index finger: focal erosion of the epidermis is seen without inflammation and without hemorrhage

B1: pons: vascular congestion

B2: cerebellum: vascular congestion

B3: inferior frontal lobe brain: vascular congestion. Negative for subarachnoid hemorrhage. Ischemic change present.

B4: brain, anterior corpus callosum: vascular congestion. Negative for axonal retraction bulbs on H & E

B5: brain, mid corpus callosum: occasional pink amorphous ovoid structures are suggestive of axonal retraction bulbs. The mid corpus callosum capillary vessels appear intact without perivascular hemorrhage.

B6: brain, posterior corpus callosum: occasional pink amorphous ovoid structures are suggestive of axonal retraction bulbs. The mid corpus callosum capillary vessels appear intact without perivascular hemorrhage.

B7: brain, medulla oblongata: ischemic change, negative for subarachnoid hemorrhage

B8: brain, parietal cortex: vascular congestion present. Small numbers of erythrocytes are present in the subarachnoid space. Erythrophagocytosis is seen without evidence of hemosiderin laden macrophages on H&E staining.

B9: brain, occipital lobe: scattered erythrocytes are present in the subarachnoid space. Sections appear negative for hemosiderin laden macrophages on H&E stains. Occasional erythrophagocytosis is seen.

B10 and B11 left eye: section 10 scattered erythrocytes are present. Extravasation of erythrocytes is present around the optic nerve. Hemosiderin laden macrophages appear present in the hemorrhage around the optic nerve on H&E staining. Intradural hemorrhage is identified. The section 11 demonstrates retinal hemorrhages.

B12 and B13 right eye: section 12 demonstrates the optic nerve subdural and intradural hemorrhage without evidence of organization. Hemosiderin laden macrophages are not identified on H&E staining. A small portion of retina is present which demonstrates retinal hemorrhage. Acute retinal hemorrhages are present on slide 13.

Slides N1 through N20, cervical spinal nerve section: several small foci of acute extravasation of erythrocytes are seen within different sections of cervical spinal nerve ganglia. Iron stains are negative for hemosiderin laden macrophages on the sections.

CAUSE OF DEATH:

It is the opinion of the undersigned that Asiah Begay died as a result of undetermined causes.

The manner of death is undetermined.

Comment: The subdural hematoma that is present measures 4mm x 4mm x 2mm; quite small and appears to significantly predate hospital admission. The spinal nerve root ganglion injuries appear to have occurred after hospital admission. The myocardial lymphoid aggregates and pneumonia suggest a possible viral infection.


Michael Arnall, M.D. 7-30-2019



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Robert A. Middleberg, PhD, F-ABFT, DABCC-TC, Laboratory Director

Toxicology Report

Report Issued 10/31/2018 11:10

To: 10625

La Plata County Coroner

Attn: Jann Smith

1101 East 2nd Avenue

Durango, CO 81301

Patient Name BEGAY, ASIAH
Patient ID MA18-104
Chain 12052025
Age 4 Y DOB 08/05/2014
Gender Female
Workorder 18310857

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Positive Findings:

<u>Compound</u>	<u>Result</u>	<u>Units</u>	<u>Matrix Source</u>
Morphine - Free	190	ng/mL	001 - Peripheral Blood
Fentanyl	5.0	ng/mL	001 - Peripheral Blood
Norfentanyl	0.53	ng/mL	001 - Peripheral Blood

See Detailed Findings section for additional information

Testing Requested:

<u>Analysis Code</u>	<u>Description</u>
8051B	Postmortem, Basic, Blood (Forensic)

Specimens Received:

<u>ID</u>	<u>Tube/Container</u>	<u>Volume/ Mass</u>	<u>Collection Date/Time</u>	<u>Matrix Source</u>	<u>Miscellaneous Information</u>
001	Gray Top Tube	11.65 mL	Not Given	Peripheral Blood	
002	Gray Top Tube	10.65 mL	Not Given	Peripheral Blood	

All sample volumes/weights are approximations.

Specimens received on 10/24/2018.



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Detailed Findings:

Analysis and Comments	Result	Units	Rpt. Limit	Specimen Source	Analysis By
Morphine - Free	190	ng/mL	5.0	001 - Peripheral Blood	LC-MS/MS
Fentanyl	5.0	ng/mL	0.10	001 - Peripheral Blood	LC-MS/MS
Norfentanyl	0.53	ng/mL	0.20	001 - Peripheral 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. Fentanyl (Duragesic®; Sublimaze®) - Peripheral Blood:

Fentanyl is a DEA Schedule II synthetic morphine substitute anesthetic/analgesic. It is reported to be 80 to 200 times as potent as morphine and has a rapid onset of action as well as addictive properties.

It is reported that patients lost consciousness at mean plasma levels of fentanyl of 34 ng/mL when infused with 75 mcg/Kg over a 15 min period; peak plasma levels averaged 50 ng/mL.

After application of a fentanyl transdermal preparation (patch), serum fentanyl concentrations are reported to be in the following ranges within 24 hours:

25 mcg/hour patch: 0.3 - 1.2 ng/mL

50 mcg/hour patch: 0.6 - 1.8 ng/mL

75 mcg/hour patch: 1.1 - 2.6 ng/mL

100 mcg/hour patch: 1.9 - 3.8 ng/mL

Following removal of the patch, serum fentanyl concentrations are reported to decrease with a mean elimination half-life of 17 hours (range, 13 to 22 hours).

The mean peak plasma serum fentanyl concentration in adults given an 800 mcg oral transmucosal fentanyl preparation over 15 minutes is reported at 2.1 ng/mL (range, 1.4 - 3.0 ng/mL) at approximately 0.4 hours.

Signs associated with fentanyl toxicity include severe respiratory depression, seizures, hypotension, coma and death. In fatalities from fentanyl, blood concentrations are variable and have been reported as low as 3 ng/mL.

Substance(s) known to interfere with the identity and/or quantity of the reported result: 4-methylphenethyl acetyl fentanyl

2. Morphine - Free (Codeine Metabolite) - Peripheral Blood:

Morphine is a DEA Schedule II narcotic analgesic. In analgesic therapy, it is usually encountered as the parent compound, however, it is also commonly found as the metabolite of codeine and heroin. In illicit preparations from which morphine may arise, codeine may be present as a contaminant. A large portion of the morphine is bound to the blood proteins or is conjugated; that which is not bound or conjugated is termed 'free morphine'. Hydromorphone is a reported metabolite of morphine.

In general, free morphine is the active biologic agent. Morphine has diverse effects that may include analgesia, drowsiness, nausea and respiratory depression. 6-monoacetylmorphine (6-MAM) is the 6-monoacetylated form of morphine, which is pharmacologically active. It is commonly found as the result of heroin use.

Peak serum concentrations occur within 10 to 20 minutes of a 10 mg/70 kg intramuscular dose, with an average concentration of 60 ng/mL 30 minutes following administration. IV administration of the same dose resulted in an average concentration of 80 ng/mL after 30 minutes. Chronic pain patients receiving an average of 90 mg (range 20 - 1460) daily oral morphine had average serum concentrations of 73 ng/mL (range 13 - 710) morphine. In 15 cases where cause of death was attributed to opiate toxicity (heroin, morphine or both), free morphine concentrations were 0 - 3700 ng/mL (mean = 420 +/- 940). In comparison, in cases where COD was unrelated to opiates (n=20) free morphine was 0 - 850 ng/mL (mean = 90 +/- 200). The ratio of whole blood concentration to serum or plasma concentration is approximately one.



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Reference Comments:

3. Norfentanyl (Fentanyl Metabolite) - Peripheral Blood:

Norfentanyl is the primary inactive metabolite of the synthetic narcotic analgesic fentanyl.
Substance(s) known to interfere with the identity and/or quantity of the reported result: Benzyl Fentanyl

Unless alternate arrangements are made by you, the remainder of the submitted specimens will be discarded one (1) year from the date of this report; and generated data will be discarded five (5) years from the date the analyses were performed.

Workorder 18310857 was electronically
signed on 10/31/2018 10:02 by:

Denice M. Teem, B.S., D-ABFT-FT
Certifying Scientist

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 50016B - Opiates - Free (Unconjugated) Confirmation, Blood - Peripheral Blood

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

<u>Compound</u>	<u>Rpt. Limit</u>	<u>Compound</u>	<u>Rpt. Limit</u>
6-Monoacetylmorphine - Free	1.0 ng/mL	Hydromorphone - Free	1.0 ng/mL
Codeine - Free	5.0 ng/mL	Morphine - Free	5.0 ng/mL
Dihydrocodeine / Hydrocodol - Free	5.0 ng/mL	Oxycodone - Free	5.0 ng/mL
Hydrocodone - Free	5.0 ng/mL	Oxymorphone - Free	1.0 ng/mL

Acode 52484B - Fentanyl and Acetyl Fentanyl Confirmation, Blood - Peripheral Blood

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

<u>Compound</u>	<u>Rpt. Limit</u>	<u>Compound</u>	<u>Rpt. Limit</u>
Acetyl Fentanyl	0.10 ng/mL	Norfentanyl	0.20 ng/mL
Fentanyl	0.10 ng/mL		

Acode 8051B - Postmortem, Basic, Blood (Forensic) - Peripheral Blood

-Analysis by Enzyme-Linked Immunosorbent Assay (ELISA) for:

<u>Compound</u>	<u>Rpt. Limit</u>	<u>Compound</u>	<u>Rpt. Limit</u>
Amphetamines	20 ng/mL	Fentanyl / Acetyl Fentanyl	0.50 ng/mL
Barbiturates	0.040 mcg/mL	Methadone / Metabolite	25 ng/mL
Benzodiazepines	100 ng/mL	Methamphetamine / MDMA	20 ng/mL
Buprenorphine / Metabolite	0.50 ng/mL	Opiates	20 ng/mL
Cannabinoids	10 ng/mL	Oxycodone / Oxymorphone	10 ng/mL
Cocaine / Metabolites	20 ng/mL	Phencyclidine	10 ng/mL

-Analysis by Headspace Gas Chromatography (GC) for:

<u>Compound</u>	<u>Rpt. Limit</u>	<u>Compound</u>	<u>Rpt. Limit</u>
Acetone	5.0 mg/dL	Isopropanol	5.0 mg/dL
Ethanol	10 mg/dL	Methanol	5.0 mg/dL