

AUTOPSY REPORT

Name: MIDYETTE, JASON J
DOB: 12/17/05

Age/Sex: 02M 14D/M Submit Dr: MEYER, JOHN E

AUTOPSY NO: 06A 31

AUTOPSY INFORMATION:

DATE OF DEATH: 03/03/06 @ 1610
DATE OF AUTOPSY: 03/04/06 @ 1130
CORONER #: 1199-06-A

FINAL DIAGNOSIS:

- I. Craniocerebral injury
 - A. Skull fracture, left parietal
 - B. Right temporal, left temporal, and right frontal lobe contusions, remote
 - C. Organizing cerebral subdural hemorrhage
 - D. Marked brain swelling
 - E. Bilateral cerebral vein thromboses
 - F. Hemorrhagic infarction of cerebral hemispheres, bilateral
 - G. Autolysis ("respirator" or nonperfused brain changes)
 - H. Status post placement of right frontal lobe shunt
 - I. Subacute cerebral and cerebellar subarachnoid hemorrhage
- II. Multiple healing skeletal fractures
 - A. Left fourth metatarsal
 - B. Right first, second, and fourth metatarsals
 - C. Right clavicle
 - D. Right second, third, and fourth metacarpals
 - E. Right distal radius and ulna
 - F. Left proximal radius
 - G. Left distal radius
 - H. Left ulna
 - I. Left proximal tibia
 - J. Left proximal fibula
 - K. Left distal femur
 - M. Right distal fibula
 - N. Right distal tibia
 - O. Left sixth, seventh, eighth, ninth, and eleventh ribs
 - P. Right sixth, seventh, eighth, and ninth ribs
- III. Bronchopneumonia, focal, lungs

TOXICOLOGIC STUDIES:

Blood ethanol - none detected

Blood drug sample screen - positive for benzodiazepines

Thomas J. Faure
Coroner

John E. Meyer, M.D.
Deputy Coroner/Medical Examiner

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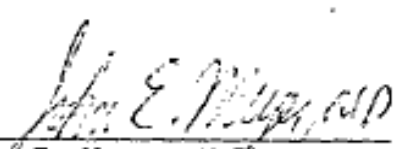
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CLINICOPATHOLOGIC CORRELATION:

Cause of death of this 10-week-old infant is blunt force craniocerebral injuries. The toxicologic studies indicated that the admission blood from The Children's Hospital was positive for benzodiazepines. The decedent had previously received lorazepam while in the Emergency Room at Boulder Community Hospital, thus accounting for this positive test. Neuropathologic examination of the brain was performed by Dr. Ross Reichard at the Office of the Medical Investigator at the University of New Mexico. Examination of the eyes was performed by Dr. Robert Keyser at the University of Colorado Health Sciences Center. Selected sections of bone were examined by Dr. Peter Bullough at the Hospital for Special Surgery, an affiliate of Cornell University Medical College in New York. DNA sequencing and fibroblast culture to determine the presence of osteogenesis imperfecta were performed by the Collagen Diagnostic Laboratory at the University of Washington in Seattle. The reports from all of these consultants are attached.


John E. Meyer, M.D.
Pathologist

EXTERNAL EXAMINATION:

EXTERNAL EVIDENCE OF THERAPEUTIC INTERVENTION: In the right posterior frontal area of the scalp is a 2.9 cm in length sutured surgical-type wound oriented in an anterior-posterior direction. In the right upper temporal/frontal area of the scalp is an obliquely oriented 7 mm similar sutured surgical wound. A 2-way catheter is present in the right inguinal area and is secured by two black sutures. A band-aid is present on the right forearm. It overlies a 4 x 2.5 mm oval area of skin excoriation. This area is consistent with a punch biopsy site of the skin. On the dorsum of the right hand between the fourth and fifth metacarpals is a healing venipuncture site. A similar faint venipuncture site is present on the dorsum of the left hand. Three heel stick marks are present on the left heel and one identifiable heel stick mark on the right heel.

GENERAL EXTERNAL EXAMINATION: The unembalmed, well developed and nourished Caucasian male body measures 52.5 cm in length and weighs 3825 gm. The scalp is covered by fine tan-brown hair. The fontanelles are soft and fluctuant. On the right temporal area of the scalp, 2 cm below the top of the head and 6 cm above the level of the right external auditory canal is a scabbed, 4 x 1 mm area of skin. On the lateral right cheek, 1.8 cm anterior to and 1.5 cm below the right external auditory canal is a similar scabbed, round, 3 mm in diameter area. On the left ala of the nose is a 3 x 3 cm similar scab, crusted area of abrasion. Behind the left ear, 1.5 cm above and 2.5 cm posterior to the left external auditory canal is a similar scabbed 3 x 1 mm area. Both external auditory canals are patent and free of blood. The eyes are blue to tan and the pupils equally dilated. The conjunctival surfaces are pink-tan and without petechial hemorrhages. The sclerae are white, without blue or gray coloration. The tongue is smooth, pink-tan and granular. No teeth have erupted. The

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EXTERNAL EXAMINATION: (Continued)

buccal mucosa exhibits no evidence of injury. The frenulum is absent. The neck contains no palpable adenopathy or masses and the trachea and larynx are midline. The chest is symmetrical. The abdomen is flat and contains no scars. No palpable organomegaly is identified. The umbilicus is well-healed and without evidence of inflammation. The tip of the foreskin is edematous but appears to be circumcised. Both testes are palpable in the scrotum. The anus is patent. The extremities are unremarkable. Examination of the back discloses no congenital abnormalities. The overall shape of the face is oval. At the time of autopsy, rigor mortis is 3-4+ and broken with firm pressure. Livor mortis is dorsal, nonblanching and 3+. The head circumference is 38.5 cm, the chest circumference 32 cm at the level of the nipple, and abdominal circumference 28 cm at the level of the umbilicus. Heel-toe length is 7.7 cm.

INTERNAL EXAMINATION:

The anterior chest musculature is well preserved. No hemorrhage of the anterior chest musculature is noted.

MEDIASTINUM: The mediastinal contents are normally distributed. The 4 gm thymus gland has a normal lobulated pink-tan appearance without intrinsic abnormalities identified. The remainder of the mediastinal structures are unremarkable.

BODY CAVITIES: The right and left thoracic cavities contain 1 cc of straw colored fluid. The pleural surfaces are smooth and glistening. The pericardial sac contains 3 cc of fluid. The epicardium and pericardium are unremarkable. The abdominal contents are normally distributed and covered by smooth glistening serosa. There is approximately 4 cc of clear yellow fluid within the abdominal cavity.

NECK ORGANS: The strap musculature of the neck exhibits no evidence of hemorrhage or traumatic injury. The bones and cartilage of the larynx are intact, without evidence of traumatic injury. The hyoid bone is also intact without injury. The tracheobronchial tree is lined by pink-tan, smooth velvety mucosa and the laryngeal mucosa is unremarkable. The epiglottis is normal in appearance. Serial sectioning of the tongue discloses a pink-tan musculature without evidence of recent or remote hemorrhage or traumatic injury. The thyroid gland weighs 0.6 gm and has a normal lobar configuration. The sections are homogeneous and finely lobular. No nodules are identified.

LUNGS: The 32 gm right lung and 33 gm left lung have a smooth, glistening pleural surface. The dependent portions of both lungs contain a small amount of purple mottling. Cut sections of the lung disclose a spongy pink-tan alveolar architecture. The intrapulmonary bronchi and vasculature are unremarkable. No evidence of consolidation or inflammation is identified.

HEART: The 23 gm heart has a normal external appearance. No subepicardial adipose tissue is identified. The coronary arteries are normal in their distribution. The valve cusps are thin, delicate and pliable and contain no vegetation or thrombosis. Cut sections of the ventricular myocardium disclose a homogeneous, intact, pink-tan musculature with no evidence of abnormality. The endocardium is unremarkable. The major vessels enter and leave the heart in the normal fashion. The foramen ovale is patent only by probe.

ADRENALS: The adrenal glands are of normal size and shape with a combined weight of 4 gm. Cut sections disclose a pale tan cortex surmounting a tan-gray medullary area.

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INTERNAL EXAMINATION: (Continued)

No intrinsic abnormalities are identified.

KIDNEYS: The kidneys have a combined weight of 29 gm. The surfaces are smooth but retain a small degree of fetal lobulation. The cut sections disclose an intact corticomedullary architecture. The renal papillae are sharply demarcated. The pelvocaliceal system is lined by unremarkable gray-white mucosa. The ureters are patent throughout their course to the bladder.

SPLEEN: The 9 gm spleen has a smooth purple-red capsule. The cut sections are homogeneous and purple with identifiable red and inconspicuous white pulp. A small <1 gm accessory spleen is identified.

PANCREAS: The pancreas is of normal size and shape. The cut sections are finely lobular and pink-tan. No intrinsic abnormality is identified.

LIVER: The 112 gm liver has a smooth tan-red capsule. The cut sections disclose an intact somewhat mottled lobular architecture which is red-tan.

GALLBLADDER: The gallbladder contains <1 cc of green-yellow bile. The mucosa is smooth and velvety. No stones are identified. The cystic duct, right and left hepatic duct and common bile duct are patent throughout their course to the duodenum.

BLADDER: The bladder contains 15 cc of urine. The bladder mucosa is smooth and velvety. No intrinsic abnormalities are identified.

PROSTATE: The prostate gland is of normal size and shape for the decedent's age. Cut sections are pink-tan and without nodules or intrinsic abnormalities. The seminal vesicles are unremarkable.

GASTROINTESTINAL TRACT: The esophagus is empty. It is lined by gray-white mucosa. The stomach contains 10 cc of green-brown slightly viscous fluid without particulate material. The mucosa of the stomach is autolyzed. No hemorrhage or ulceration is identified. The small intestine contains a small amount of green-yellow chyme. The appendix is present. The large intestine is lined by autolyzed mucosa and contains green-brown fecal material. No intrinsic abnormalities are identified.

TESTICLES: The testes are of normal size and shape for the decedent's age. No intrinsic abnormalities are identified and the cut surfaces are spongy and pink-tan. The adnexal structures are unremarkable.

LYMPHATIC SYSTEM: Scattered mildly enlarged lymph nodes are present in the mesentery of the mediastinum. These are consistent with the decedent's age.

AORTA AND VENA CAVA: The aorta is patent throughout its course as are its major branches. No abnormalities of the aorta are identified. The vena cava is unremarkable.

SKULL AND BRAIN: Reflection of the scalp discloses a 4 x 4.5 cm area of very mild scalp hemorrhage in the vicinity of the previously mentioned surgical wound of the right side of the scalp. There is a round to slightly oval, 4 x 3 mm puncture defect in the right side of the coronal suture. Exuding from this puncture site is blood and possible necrotic brain material. The puncture wound is consistent with placement of an intracranial pressure monitor. The remainder of the scalp contains no evidence of

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INTERNAL EXAMINATION: (Continued)

recent or remote hemorrhage or traumatic injury. On removal of the skull cap, there is found to be a thin film of subdural hemorrhage over the left cerebral hemisphere mostly in the parietal area. This is loosely adherent to the dura. A similar thinner film of subdural hemorrhage is present over the right cerebral hemisphere. On examination of the surface of the brain, there is found to be petechial hemorrhages over the right and left cerebral hemispheres as well as yellow discoloration of the lateral aspect of the right and left frontal lobes extending posteriorly into the upper aspect of the temporal lobes. The right and left thin films of subdural hemorrhage extend into both middle fossae. The yellow discoloration extends downward toward the base of the brain and covers the anterior aspect of the pons. There are focal scattered areas of subarachnoid hemorrhage on the inferior surfaces of both frontal lobes and the tip of the right temporal lobe. There is rather diffuse narrowing of the sulci and flattening of the gyri. The brain weighs 485 gm. The frontal suture is wide open with a width of approximately 8 mm. The anterior fontanel is soft. On examination of the calvarial skullcap, there is found 3.5 cm anterior to the posterior fontanel a linear fracture which extends laterally to the left at almost an 90 degree angle from the sagittal suture a distance of approximately 3.2 cm. The spinal cord is soft but without trauma.

MUSCULOSKELETAL SYSTEM: Examination of the right clavicle discloses a fusiform swelling and induration of the mid to distal clavicle without fresh surrounding hemorrhage. This is consistent with a healing fracture. A transverse healing diaphyseal fracture of the left radius is identified. No yellow discoloration surrounds this area. Dissection of multiple bones including bilateral ribs, both radii and ulnae, left femur, and left and right tibia and fibula as well as right and left metatarsals are retrieved for histologic examination. These bones are in accordance with the fractures noted on both pre and postmortem skeletal surveys. Dissection of the buttock musculature and musculature of the back discloses no evidence of contusion.

MICROSCOPIC DESCRIPTION:

All sections stained with H&E.

THYROID AND PARATHYROID: Unremarkable.

ADRENAL GLAND: Unremarkable.

LUNGS: Focal early acute bronchopneumonia.

LIVER: Mild sinusoidal congestion.

PANCREAS: Unremarkable.

SPLEEN: Unremarkable.

THYMUS GLAND: Unremarkable.

LARYNX: Unremarkable.

TONGUE: Unremarkable.

HEART: Unremarkable.

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MICROSCOPIC DESCRIPTION: (Continued)

TESTIS: Unremarkable.

PROSTATE: Unremarkable.

KIDNEY: Unremarkable.

SKIN: Unremarkable.

SKELETAL SYSTEM: The left fourth metatarsal and the right first, second, and fourth metatarsals exhibit small resolving fractures with endosteal and periosteal reaction. Devitalized bone is present in these areas. The fracture of the skull also exhibits devitalized bone with peripheral new bone formation as well as adjacent early fibrosis. A section of the fracture of the clavicle discloses callus formation with fibrosis and central devitalized bone. Capillary proliferation is seen in the area of healing. The fractures of the metatarsals are generally in the metaphyseal area. The clavicular fracture is in the diaphyseal area. The right second, third, and fourth metacarpals also exhibit similar appearing fractures, with devitalized bone and fibrous tissue proliferation as well as new bone formation. These metacarpal fractures are also located mainly towards the metaphyseal area. Sections from the right distal radius and ulna disclose small metaphyseal fractures. Sections of the right and left first ribs disclose no evidence of fracture. The fracture of the left proximal radius is similar to the fracture seen in the clavicle. Its location is diaphyseal. The left distal radius exhibits a small metaphyseal fracture. Sections of the left distal ulna exhibit similar metaphyseal fracture. The left proximal tibia discloses an epiphyseal fracture and a small amount of fibrous tissue and scattered osteoblasts. Early new bone formation is identified. Sections of the left proximal fibula do not disclose evidence of fracture. Sections from the left distal femur also exhibit an early epiphyseal fracture. Sections from the right distal femur do not exhibit definite fracture. Sections from the right distal fibula exhibit an epiphyseal fracture with early new bone formation and fragments of devitalized bone. Sections from the right distal tibia also exhibit disruption of the epiphysis focally. Sections from the left eleventh rib exhibit a healing fracture with early new bone formation and dilated vasculature which is congested. The left posterior sixth rib exhibits a resolving fracture with more pronounced new bone formation. Sections from the left anterior sixth rib exhibit an additional fracture with less pronounced reactive and reparative change than the posterior portion of the rib. The left anterior seventh rib also exhibits a fracture which is less advanced in its healing. The left eighth rib, left anterior ninth rib, left posterior ninth rib, right anterior sixth rib, right anterior seventh rib, right anterior eighth rib, and right ninth rib exhibit similar healing fractures.

SLIDE KEY: (A1) - thyroid, adrenal gland; (A2,A3) - lungs; (A4) - liver, pancreas, spleen; (A5) - thymus, larynx, tongue; (A6) - heart; (A7) - testis, prostate, kidney; (A8) - skin; (A9) - left fourth metatarsal; (A10) - right second metatarsal; (A11) - right fourth metatarsal; (A12) - right first metatarsal; (A13) - skull; (A14) - right clavicle; (A15) - right second metacarpal; (A16) - right third metacarpal; (A17) - right fourth metacarpal; (A18,A19) - right distal radius and ulna; (A20) - right first rib; (A21) - left first rib; (A22) - left proximal radius; (A23) - left distal radius; (A24,A25) - left ulna; (A26-A29) - left proximal tibia; (A30) - left proximal fibula; (A31-A33) - left distal femur; (A34,A35) - right distal femur; (A36) - right distal fibula; (A37,A38) - right distal tibia; (A39) - left eleventh rib; (A40) - left posterior sixth rib; (A41) - left anterior sixth rib; (A42) - left anterior seventh rib; (A43) - left anterior eighth rib; (A44) - left anterior ninth rib; (A45,A46) -

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MICROSCOPIC DESCRIPTION: (Continued)

left posterior ninth rib; (A47) - right anterior sixth rib; (A48) - right anterior seventh rib; (A49) - right anterior eighth rib; (A50) - right ninth rib; (A51) - right dura; (A52) - left dura; (A53) - right middle fossa dura; and (A54) - left posterior fossa dura.

END OF REPORT