



OFFICE OF THE MEDICAL EXAMINER
701 W. Jefferson St.
Phoenix, AZ 85007

MEDICAL EXAMINER REPORT

DECEDENT: Savannah Katheryn Cross

CASE: 12-07434

DATES OF EXAMINATION: 12/12/2012, 12/13/2012, 12/14/2012

TIME: 07:45 Hours
(Day 1)

PRESENT AT EXAMINATION:

Detectives J. Cleary #4000 and Jeremy Herera #8282 (Phoenix Police Department)
Frankie Grimsman (Maricopa County Attorney's Office)

SIGNIFICANT FINDINGS AND PATHOLOGIC DIAGNOSES

- I. Trauma of the head and neck
 - A. Scalp abrasions and contusions
 - B. Facial abrasions and contusions
 - C. Inner lower lip laceration
 - D. Chin laceration
 - E. Neck abrasions
 - F. Ligature abrasion of the neck
 - G. Healing right eye penetrating trauma (see also ocular pathology report)

- II. Blunt trauma of the torso
 - A. Abrasions and contusions
 - B. Abdominal wall contusions
 - C. Mesenteric and intestinal contusions

- III. Anogenital trauma
 - A. Anal laceration and contusion
 - B. Perianal contusions
 - C. Mons pubis contusion
 - D. Vaginal mucosal hemorrhage
 - E. Perineal contusion

Significant findings and pathologic diagnoses continued

CAUSE OF DEATH: Multiple traumatic injuries, acute methamphetamine and diphendrydamine exposure, and dehydration

MANNER: Homicide

12-6-13

Date Signed

JEFFREY JOHNSTON, MD
CHIEF MEDICAL EXAMINER

Significant findings and pathologic diagnoses continued

- IV. Extremity trauma
 - A. Abrasions and contusions
 - B. Punctate abrasions/punctures
 - C. Right posterior hand cigarette-type burn (recent and healed)
 - D. Right leg bite trauma (see also forensic odontology report)
 - E. Right popliteal fossa and anterior right thigh patterned contusions (tram-track)
 - V. Vitreous electrolyte evidence of hypernatremic dehydration
 - VI. Acute methamphetamine and diphenhydramine exposure (see also toxicology report)
 - VII. Postmortem cultures positive for *Escherichia coli* (blood and lungs) and *Staphylococcus aureus* (lungs)
 - VIII. Underweight for age and stature
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SUMMARY AND OPINION

According to the preliminary report of death, on the morning of 12/11/12, this 2-year-11-month old girl was noted to be moaning in her crib. Her caregiver reportedly picked her up and she became unresponsive. Reportedly, the caregiver placed the decedent in the shower in an attempt to revive her then took the decedent to the living room and contacted emergency-911. The decedent was transported to Maricopa Medical Center where she was noted to be in asystole. She had multiple contusions and abrasions. She was pronounced dead at 0738 hours. Radiological studies were performed (skeletal survey and head computed tomography).

According to police reports, the decedent lived with two adult caregivers, a 5-year-old child, and an 8-year-old child. The adults also babysat for an 18-month-old child and a 23-month-old child, sometimes keeping them overnight. The children got along well, though the 23-month-old child went through a recent "biting phase" which ceased at an unknown time prior to the decedent's death. The adults began caring for the decedent full-time around the end of September, 2012; the decedent's mother did take her overnight on Thanksgiving. Discipline techniques included time-outs including being placed in a high-chair (this technique was reportedly discontinued when the decedent began rocking the highchair reportedly causing it to topple over), having an adult lie in front of the decedent after she was placed on a couch, sitting on the decedent's lower extremities while she lay down, "flicking", throwing items (including a pen) at her, and spanking. The decedent was described as kicking, screaming, and biting when she was forced to sit or lay. Reportedly, the decedent "bruised easily" (according to adult caregivers and decedent's mother). Bruises were described as small and on the arms, legs, and back. They were noted to worsen in October of 2012; around this time, the decedent developed white "bumps" on her scalp; she would scratch them and a bald spot had formed. The decedent reportedly picked and pinched at herself and pulled at

her ears until they bled. The adult caregivers would attempt to treat bruises by wetting a washcloth with warm water and vinegar, applying the washcloth to the bruise, then applying a heating pad over the washcloth for 10-15 minutes. Reportedly, one of the adults had held a cloth over the decedent's mouth in the past to muffle her screaming. Sometime after 11/23/12, the decedent sustained a right eye injury (details not reported). Reportedly the decedent fell from her playpen where she slept onto the tile floor on 12/9/12 sustaining a chin laceration and a forehead bruise with swelling.

On 12/10/12, the night before the decedent's death, one caregiver admitted to kicking the decedent in the abdomen while she lay on her side on the floor, simultaneously applying his full body weight (estimated at 200-230 pounds) to the abdomen. The decedent was noted approximately 30 minutes later to be on a couch, holding her abdomen and moaning; she fell to the floor without supporting her fall. The decedent was placed to bed on 12/10/12 (unclear who placed the child, both caregivers admitted to doing so) and woke twice, yelling "ma, ma, ma." She was told to be quiet by each adult separately. The morning of 12/11/12, the decedent was brought out of her room in the arms of one adult; the decedent was reportedly moaning (described as "ahhhh" sounds and a pause, repeatedly), staring straight ahead, and otherwise unresponsive. She was taken to the bathroom and cold water was sprayed in her face via a flexible shower nozzle. Shortly thereafter, the decedent vomited then stopped breathing. Emergency-911 was contacted. Police officials discovered over-the-counter sleeping pills near the decedent's playpen; reportedly they were kept on top of a television in the decedent's room which she could have gained access to; 2 pills were unaccounted-for. One of the adults described the bruises that morning as "10 times more than what she had before," including the night prior.

Emergency personnel records and terminal medical records document that the decedent was found by Phoenix Fire Department Emergency Medical Service (EMS) personnel in asystole with fixed and dilated pupils. Her skin was described as warm and dry. An estimated 4-inch hematoma was noted on the forehead and an estimated 1/2-inch laceration was noted under the chin. Bruising was noted on the neck, chest, abdomen, extremities, and back. Initial blood glucose was 22 mg/dL. She was transported to Maricopa Integrated Health System Hospital (Maricopa Medical Center) arriving at 0729 hours in asystole. Her temperature was 38.6 degrees Celsius (101.5 degrees Fahrenheit); apparently measured rectally. Urine was unable to be obtained via a straight catheter. Resuscitative efforts were unsuccessful and she was pronounced dead at 0738 hours on 12/11/12. Postmortem radiographic skeletal survey showed no fractures or dislocations. Postmortem computed tomography (CT) of the head and cervical spine without contrast showed no skull or cervical fractures; scalp swelling was described along the vertex. Postmortem chest radiograph showed no evidence of pneumothorax, pleural effusion, or consolidation; no fractures were identified.

Medical records from Heart of the Rockies Regional Medical Center document the decedent was born vaginally with Apgar scores of 8 and 9 at 1 and 5 minutes, respectively. Newborn metabolic testing was normal. She was seen by a pediatrician on 1/19/11 (age 1-year-1-month) for low grade fever and upper respiratory symptoms; no past medical history or skin abnormalities were noted at that time.

Postmortem examination showed innumerable contusions and abrasions involving the

head, face, neck, torso, and extremities. A bite-pattern cluster of contusions was on the posterior left leg; nearby was a tram-track pattern contusion. A pattern contusion consistent with spanking by a hand involved the right buttock. The hair appeared to have been irregularly cut and the scalp had abrasions and contusions; some of the abrasions had evidence of healing. The face and ears were involved by an abrasive process that spared the recesses of the face and showed apparent postmortem drying effect. The forehead had a large bruise with swelling. The inner lower lip had a laceration with evidence of healing. A laceration was under the chin. A patterned injury consistent with a ligature abrasion was on the anterior neck; layered neck dissection showed no gross hemorrhage or laryngeal skeleton fractures; minimal microscopic hemorrhage was identified in the soft tissue anterior to the trachea; no conjunctival or oral mucosal petechiae were identified. The abdomen had bruising and there were contusions of the intestinal loops with hemorrhage into the mesentery. The anus had a laceration and associated perianal contusion. The mons pubis had a contusion; the vagina had mucosal hemorrhages; the hymen appeared to be intact. The back of the right hand had an injury consistent with a cigarette burn adjacent to a scar with a similar shape and dimensions. Microscopic examination showed inflammatory responses and hemorrhage in the frontal and left frontotemporal scalp, the inner lower lip laceration, the chin laceration, the abdominal wall, small intestine, mesentery, peripancreatic soft tissue, iliopsoas muscle, subcutaneous tissue of the lumbar area back, right buttock, anorectal tissue, one of the hand contusions, and the left leg bite trauma. There was microscopic evidence of more advanced healing of the abdominal wall, the inner lip laceration, and the sampled hand contusion (comment: the lip and abdomen findings may also represent acute on healing injuries). No congenital or natural disease processes were identified.

Ocular pathology consultation showed a healing laceration of the right eye cornea and lens consistent with sharp trauma (see also ocular pathology report).

Forensic odontology assessment of the apparent bite trauma of the left leg showed general characteristics of a bite mark that were most consistent with being caused by an adult (see also forensic odontology report).

Postmortem toxicology of the cardiac blood was positive for methamphetamine (2.29 mg/L), amphetamine (0.64 mg/L), diphenhydramine (0.87 mg/L), and nordiphenhydramine. The bile was positive for methamphetamine, amphetamine, diphenhydramine, and nordiphenhydramine. The gastric contents were positive for methamphetamine (4.08 mg/L), amphetamine (0.96 mg/L), and diphenhydramine (4 mg/L).

Vitreous electrolytes showed a hypernatremic dehydration pattern (sodium 157 mmol/L; potassium 21.8 mmol/L; chloride 140 mmol/L; urea 44 mg/dL; creatinine 0.7 mg/dL; and glucose 2 mg/dL).

Nasal viral studies showed herpes simplex virus type 1 (comment: virus that causes cold sores). Postmortem cardiac blood culture grew *Escherichia coli*. Bilateral lung cultures showed heavy growth of *Escherichia coli*, heavy growth of methicillin resistant *Staphylococcus aureus*, and light growth of normal respiratory flora. A postmortem metabolic screen reported a CAH 17-OHP abnormality (comment: there was no autopsy

evidence of adrenal hyperplasia and the neonatal screen was negative per medical records).

Given the above data set, in my opinion, the cause of death is best listed as multiple traumatic injuries, acute methamphetamine and diphenhydramine exposure, and dehydration. The manner of death is homicide.

As with all death investigations, opinions expressed herein are amenable to change should new, reliable, and pertinent information come to light.

The Maricopa County Medical Examiner's Office is required by statute (A.R.S. § 11-594(A)(2) and (4)) to certify the cause and manner of death following completion of the death investigation of each case over which it assumes jurisdiction, and to promptly execute a death certificate, on a form provided by the state registrar of vital statistics, indicating the cause and manner of death. The form provided by the state registrar of vital statistics includes five manners of death: homicide, suicide, accident, natural, and undetermined. The determination of manner of death is a forensic determination by the pathologist predicated upon the totality of all then-known forensic evidence and other circumstances surrounding the cause of death; it is not a legal determination of criminal or civil responsibility of any person(s) for the death.

POSTMORTEM EXAMINATION

The postmortem examination was performed by Dr. Kathleen Enstice from 12/12/12 through 12/14/12. The medical examiner report was incomplete at the time of her resignation from the Maricopa County Medical Examiner's Office. The narrative below is based on Dr. Enstice's narrative descriptions and my review of photographs and other departmental documentation.

EXTERNAL EXAMINATION

Seal 0012384 is broken on 12/12/12 to facilitate acquisition of physical evidence. Seal 0012383 is placed on the new body bag after evidence collection and broken for radiographs. After radiographs, seal 0014660 is placed and then broken on 12/13/12 for autopsy on 12/13/12 which continued to 12/14/12.

The body is that of a 35-3/4-inch, 21 pound, female child compatible with the reported age of 2-years-11-months old.

The hands and feet have been covered in brown paper bags and secured proximally by orange bands. The body bag contains a bed sheet.

Rigor mortis is not appreciable. Livor mortis is posterior and pink-purple.

The head circumference is 45.6 centimeters. The scalp hair appears blonde and is 9-1/2 inches over the left frontotemporal region, 6-inches over the right frontotemporal region, and 1/2-inch in the back and on the sides. A 0.8-centimeter scar is on the left posterior parietal scalp. The irides appear blue. The conjunctivae have no petechiae. The nasal

skeleton has no palpable fractures. The ears are symmetric, normally developed, and normally situated. The oral mucosa is tan. The upper frenulum appears intact. The teeth are natural and in good condition.

The neck, chest, abdomen, and back are normally developed and symmetric. Green discoloration is in the abdominal skin. The abdomen is flat. The genitalia are female and normally developed. Brown liquid and dry fecal material is on the perineum and buttocks; there is no discernible sanguineous component. The back is straight.

A disposable diaper shows brown fecal material consistent with that seen on the body; the buttock and posterior perineal areas are soiled and then there is sparing as one looks anterior; additional fecal material is in the anterior/pubis region of the diaper. No sanguineous component is discernible.

The upper and lower extremities are normally developed, symmetric, and have no angular deformities. The fingernails and toenails are intact and short.

A 0.4 centimeter hypopigmented, round scar is on the posterior right hand.

EVIDENCE OF MEDICAL INTERVENTION

An endotracheal tube is in the right aspect of the oral cavity and is held in place by adhesive tape that extends over the upper lip and onto the cheeks. Adhesive electrocardiographic leads are on the bilateral upper chest (2) and left lower abdomen (1); additional leads are on the arms, proximally, and the thighs (right medial and left lateral). Adhesive defibrillator pads are on the midline chest and midline mid-back. The right thumb has a pulse oximetry lead. An intraosseous catheter is in the anterior left leg. A plastic, adhesive bandage is on the posterior right heel.

EVIDENCE OF INJURY

Head and neck injuries:

The face has pink, red, and orange abrasions with contusions and swelling of the majority of the midline forehead. The abrasions spare areas around the right scalp hairline, the periorbital recesses, the cheeks near the nose and right upper lip, and the area just below the lower lip; the submental area is involved as are the ears (helices with sloughing of the skin of the superior left helix, right ear lobule, right antihelix, and posterior pinnae); large areas including the lower half of the face, the chin, and the ears have a dry, parchment-like appearance; the left cheek has superficial, focal skin sloughing.

The submental chin has a coronally oriented fusiform laceration (1 centimeter); the injury has rounded margins; small ovoid, purple-pink contusions are right of this laceration.

The right eye has clouding of the area over the pupil.

The inner aspect of the lower lip has a mucosal laceration (1.7 x 0.9 centimeters) that is

0.7 centimeter deep. The margins are irregular and the surrounding soft tissues, laterally, have underlying hemorrhage.

The scalp hair is shaved for injury assessment.

The forehead has subcutaneous, dark red, scalp hemorrhage (5.7 x 4.5 centimeters)

The left anterior scalp has a round, purple contusion (approximately 4 x 2.7 centimeters) with poorly defined margins and central sparing; within the posterior aspect of this contusion is a 0.5-centimeter, round abrasion; the subcutaneous scalp soft tissues under these areas have dark red and pink hemorrhage. A 1.1 x 0.9 centimeter abrasion is over the left ear in line transversely with the orbit. Two linear obliquely oriented (7 o'clock to 2 o'clock as one looks at the left scalp with 12 o'clock superior) abrasions (1.2 centimeters and 0.4 centimeter) with 0.2 centimeter sparing between them are on the left posterior parietal scalp; above this, posteriorly, is a 0.7-centimeter linear, nearly transverse abrasion. A 0.4-centimeter abraded contusion is on the left posterior parietal scalp. An ovoid, brown contusion is on the left scalp posterior to the left ear.

The right forehead, just above the lateral aspect of the right eyebrow, has a 2.6 x 1.2 centimeter purple-gray oblique contusion; the subcutaneous scalp soft tissues under this region have dark red and pink hemorrhage. The right temporo-parietal scalp has ill-defined purple-pink contusion; the underlying subcutaneous scalp soft tissues, including the external aspect of the right temporalis muscle, have dark red and pink hemorrhage.

The right scalp, extending from the posterior midline to an imaginary coronal line just anterior to the right ear has multiple irregular, ovoid, linear, and fusiform abrasions ranging in size from 0.1 centimeter to 1.3 centimeters; many of these injuries are crusted and have retracted margins. There is no underlying subcutaneous scalp soft tissue hemorrhage or subgaleal hemorrhage.

The midline anterior frontal scalp within the scalp hair has a 1.8 x 1 centimeter abrasion. The right paramedian anterior parietal scalp has a 0.3 centimeter, linear abrasion. An ovoid focus of hemorrhage (2.9 x 1.9 centimeters) is in the vertex subcutaneous scalp soft tissue.

No skull fractures are identified.

The anterior neck, centered just left of the anterior midline and overlying the laryngeal prominence, has a transverse pair of parallel, interrupted, linear abrasions; the lesion measures 5.6 centimeters in length and 0.5 centimeter in width; the abrasions have a 0.2 centimeter area of sparing between them.

Two, 0.3-centimeter, orange, linear, thin abrasions are on the anterolateral right neck above the level of the laryngeal prominence. A 0.3-centimeter, orange abrasion is on the anterior midline of the neck, just above the laryngeal prominence. A 0.6 x 0.6 centimeter, roughly triangular abrasion is on the anterior neck, just right of the midline and just below the jaw; this lesion is confluent with the abrasions of the face.

The right neck has a cluster of abrasions; a 0.3-centimeter, ovoid abrasion is under the

right mandible; a 0.4-centimeter, round abrasion is on the superior aspect, just below the ear and within the hair; a 2.8 x 1 centimeter oblique abrasion is on the posterosuperior aspect at the border of the scalp hair; a 1.7 x 1 centimeter irregular abrasion with a transverse, inferior, curvilinear component is on the anterior right aspect; and a 2 centimeter interrupted, linear abrasion is on the right base of the neck.

The right posterior neck has a 0.2-centimeter, round abrasion, superiorly. A 0.6-centimeter, oblique, linear abrasion is just right of the posterior midline of the neck.

The left neck has a 1.3 x 1 centimeter, inverted T-shaped abrasion, posterolaterally. A sparse cluster of punctate abrasions is on the left posterior neck.

Layered dissection of the anterior strap muscles of the neck shows no hemorrhage. The laryngeal skeleton is intact.

Torso injuries:

The midline chest has three ovoid abrasions in a triangular configuration; each abrasion is approximately 0.3 centimeter. Two punctate abrasions are over the medial right clavicle.

Two punctate yellow-orange abrasions are within the superior aspect of the chest defibrillator abrasion. A 0.7-centimeter purple-pink contusion is in the left midclavicular line within the left aspect of the chest defibrillator pad abrasion.

A small yellow-orange ovoid abrasion is on the left lower chest just right of the midclavicular line.

Scattered, contusions and small orange-yellow abrasions are on the right anterolateral chest; these injuries range in size from 0.1 to 0.9 centimeter.

The left lateral chest has a nearly coronal 1.5 x 0.8 centimeter fusiform orange abrasion with a punctate component at the inferior angle; three orange abrasions form a curvilinear cluster posterior to this injury and are 0.2, 0.5, and 0.3 centimeter. A nearly coronal cluster of orange abrasions overlies a rib on the left lower anterolateral chest just anterior to the left anterior axillary line (1.3 x 0.5 centimeters). A 1.2 x 0.2 centimeter orange, linear abrasion follows the contour of the anterior aspect of the left 10th rib; a parallel 1.1 x 0.1 centimeter linear orange abrasion is superior to this injury.

A 0.8-centimeter yellow abrasion is in the left upper quadrant of the abdomen, just left of the midline.

The lateral and right lower quadrant of the abdomen/right anterolateral hip has a cluster of abrasions and contusions: a 1.1-centimeter abrasion is on the lateral right abdomen and is bracketed by an anterior sagittal 2.7 x 0.7 centimeter contusion and a posterior, coronal 2.2 x 1.4 centimeter contusion; three brown contusions are anterior to this cluster and in the right lower quadrant of the abdomen (1.4-centimeter ovoid contusion inferiorly and two 0.9-centimeter ovoid contusions superiorly); a 0.4 centimeter abrasion is in the lateral aspect of the right lower quadrant of the abdomen; a 3.5 x 1.6 centimeter

cluster of stretch-type abrasions is over the anterior right hip; a 1.2 x 0.5 centimeter ovoid transverse abrasion is over the lateral right hip, superior to a 2.2 x 1.2 centimeter pink contusion and a 0.8-centimeter purple-brown contusion; the posterolateral right hip has a 1.1 centimeter, round abrasion.

The anterolateral left hip/lower abdomen has a 4.5 x 2.7 centimeter pink-red contusion that encompasses a small abrasion; two faint, brown contusions (each approximately 2 centimeters) are anterior and inferior to this injury cluster. A punctate abrasion is over the anterior left hip.

The left lower abdominal wall has a 2.8 x 1.9 centimeter area of deep fascial hemorrhage. The intestinal loops have separate areas of serosal contusion (at least 11 foci; ranging in size from 1.8 to 3.2 centimeters). The mesentery has marked, non-deforming hemorrhage. The duodenum and pancreas have an associated 5 x 4 centimeter area of hemorrhage (also involves the mesentery).

A 3 x 1.5 centimeter, faint, brown contusion is on the left upper back, just posterior to the axilla. A 0.8 x 0.3 centimeter abrasion is on the left mid- to upper-back, laterally, just posterior to the left posterior axillary line. The midline of the upper back has a cluster of brown contusions (1.5 centimeters and 2.9 centimeters). A brown cluster of contusions is over the midthoracic midline of the back. A pink-purple contusion is on the right upper back in the midscapular line (subcutaneous dissection shows underlying red hemorrhage). The left upper back has a brown-pink contusion in the midscapular line. The right lateral back, just posterior to the right posterior axillary line has a 0.5 centimeter abrasion.

The midline lower back has a 1.9 x 0.6 centimeter red abrasion (subcutaneous dissection shows red hemorrhage). The lower back, just left of the midline, has a sagittal 2.2 x 0.8 centimeter vaguely fusiform abrasion. The midline buttocks at the superior aspect of the gluteal cleft has an ovoid pink-purple contusion; subcutaneous dissection shows underlying soft tissue hemorrhage.

The posterolateral left hip has a 1.2 x 1.1 centimeter red abrasion. The left buttock has a vaguely C-shaped brown contusion (3.2 x 1.8 centimeters); poorly defined, purple-pink contusion involves the left buttock medial to this injury. The left lower buttock has a 0.7 x 0.3 cluster of punctate abrasions; this lesion is vaguely patterned and appears to be formed by two parallel lines with punctate abrasions on the inner aspects of the lines (see image 117). Subcutaneous dissection shows deep soft tissue hemorrhage in the left buttock (3 x 2.8 centimeter focus).

The lower back just above the right buttock and just right of the midline has a 2.1 x 0.5 centimeter ovoid abrasion. The posterolateral right hip has a 1.5 centimeter irregular abrasion. The right buttock has a 4.5 x 3.8 centimeter purple-pink-brown contusion with dense petechial hemorrhage and two ovoid areas of sparing (1.8 x 0.9 centimeters, superiorly and 1.8 x 0.8 centimeters, inferiorly). Subcutaneous dissection shows an 8 x 8 centimeter area of red hemorrhage in the right buttock soft tissues

Anogenital findings:

The photographs of the anal and genital region were reviewed with Dr. Kathryn Coffman (Pediatrician and Division Chief of the Child Protection Team with Phoenix Children's Hospital); see also her consultative report. These findings are noted to be in the context of a documented urethral straight catheterization attempt at the terminal hospital; some of these lesions may be due to this medical intervention.

The right aspect of the mons pubis has an ill-defined 1.9 x 1.6 centimeter, purple-brown contusion. The labia minora have purple and pink discoloration anteriorly. The vaginal mucosa is tan and has petechial hemorrhages which are frequently confluent around the urethral orifice, the lateral walls, and the hymen. The edges of the hymen appear intact; the hymen has a mucosal flap on the right.

The perineal skin, just posterior to the vaginal orifice has a 0.5-centimeter cutaneous contusion.

The anus has purple perianal ecchymosis and a 1.3 centimeter laceration at the 1 o'clock position (if posterior midline is 12 o'clock); the laceration is 0.2 centimeter deep. A 0.4 x 0.2 centimeter red contusion is at the 12 o'clock position.

Upper extremity injuries:

A 1.4 x 1.2 centimeter faint red abrasion is on the anterior superolateral right shoulder; medial to this is a 0.1 centimeter diameter red punctate abrasion. The posterior right shoulder has a 1 centimeter orange-brown abrasion. The lateral right shoulder has a 0.8 centimeter light purple contusion. A 1.7 centimeter round brown contusion is on the lateral right arm; a 1.6 x 0.9 centimeter contusion is on the posterior right arm at the same transverse level as this injury. A vaguely rectangular, pink, 1.5 x 1.2 centimeter contusion is on the lateral right arm, just above the elbow; at this same transverse level is a posterior, 1.5 x 1 centimeter pink contusion.

The right forearm and wrist have 16 ovoid pink, purple, and brown contusions ranging in size from 0.5 to 1.6 centimeters: a horizontal 1.6 x 0.9 centimeter purple contusion is just inferior to the medial right elbow; a 1.4 x 1 centimeter brown contusion is on the proximal posterior right forearm, centered 2-1/4 inches below the elbow; lateral to this is a 1.3 centimeter pink-brown contusion on the posterolateral right forearm; anterior to this is a 1.2 centimeter diameter brown contusion on the anterolateral right forearm; a 1.1 centimeter purple contusion is on the posterolateral right mid-forearm; slightly inferior to this is a 1.3 centimeter diameter purple contusion with a contiguous horizontal 1.4 x 0.5 centimeter faint contusion from its anterior aspect; inferior to the 1.3 centimeter contusion is a horizontal 1.8 x 0.6 centimeter purple-red contusion on the posteromedial right forearm; inferior to this, on the posterolateral right forearm is a 0.6 centimeter diameter purple contusion; distal to this, on the distal medial right wrist is a 0.5 centimeter purple-brown contusion; a 0.8 centimeter diameter faint purple contusion is on the distal anterolateral right wrist; just lateral to this is a 0.5 centimeter diameter purple-brown contusion; just posterior to this is a 0.9 x 0.5 centimeter brown contusion; a 0.3 centimeter diameter faint blue contusion is on the lateral right wrist; a 1.7 x 1 centimeter pink-red contusion is on the anterior right wrist; slightly inferior to this is a 1.2

x 1.1 centimeter pink-red contusion on the medial aspect of the right wrist.

The posterior right hand has abrasions and contusions; two confluent purple-pink contusions are on the posterolateral right hand (1.6 and 0.8 centimeters). A moderately dense cluster of punctate abrasions is on the posterior right hand; a 0.5 x 0.2 centimeter yellow-brown contusion is on the posterior proximal right index finger; a 2 x 0.4 centimeter abrasion with surrounding pink contusion is on the posterior proximal right middle finger; a 0.2 centimeter yellow abrasion is on the posterior proximal right ring finger.

A 0.3 centimeter round lesion is on the posterior right hand proximal to the middle finger; this lesion has retracted irregular margins and a red base (comment: consistent with a cigarette burn and near the similar shaped scar described in "external examination").

The central and medial right palm has a moderately dense cluster of punctate abrasions/punctures; the lateral aspect of this cluster has associated purple-pink contusion.

The left shoulder has a cluster of three yellow-orange abrasions (0.4, 0.8, and 0.9 centimeters). The posterolateral left arm has a 0.9 x 0.5 centimeter red abrasion. The lateral left arm has a wedge-shaped, 1.3 x 1 centimeter orange abrasion, superiorly; this is associated with a transverse 1.3 x 0.4 centimeter purple contusion which is contiguous and superior. The lateral left arm has a punctate abrasion and associated 0.5-centimeter purple contusion; this is within an area of mottled, poorly defined contusion; 3 additional punctate abrasions are on the posterolateral left arm. Multiple small, yellow abrasions involve the anterior left arm. A 2 centimeter purple-pink contusion is on the anterior left arm, just above the antecubital fossa. A vaguely rectangular 1.5 x 1.2 centimeter pink-red contusion is on the lateral left arm, just above the elbow (comment: appears similar in shape to the contusion in the same location on the right arm).

The anterolateral and lateral left elbow and proximal forearm have pink and brown contusions surrounding a moderately dense cluster of punctate abrasions/punctures. The medial left elbow has a 1.2 centimeter round brown-pink contusion; adjacent to this injury are 3 punctate abrasions. The posterior left forearm has a 2.6 x 2.3 centimeter purple-brown contusion with a lateral 0.5 centimeter abrasion. The anterolateral left forearm has a purple contusion.

The lateral left wrist has a 1.3 x 0.8 centimeter brown contusion. The posteromedial left wrist has a 2.5 x 2 centimeter purple contusion with central, ovoid, 1.7 x 0.7 centimeter sparing; this lesion is confluent with yellow- brown-green-purple contusion of the posterior left hand with swelling and central sparing; the contusion involves the middle and ring fingers, proximally; organizing and clotted blood are identified on subcutaneous dissection. The posterior left hand has a 0.5 x 0.3 centimeter crescentic abrasion. Sparse, punctate abrasions are on the posterior hand and also involve the areas between the knuckles of the index, middle, and ring fingers. A 1.8 centimeter brown ovoid contusion is on the posterior left hand at the base of the thumb. A 0.2 centimeter abrasion is on the posterior left ring finger, distally; the injury is not over a joint.

Lower extremity injuries:

The lower extremities have numerous contusions and abrasions involving the anterior, lateral, medial, and posterior surfaces. These injuries include apparent bite trauma of the posterior left leg, proximally, and parallel linear contusions with central sparing ("tram-track" pattern) of the left popliteal fossa.

The posterior left lower thigh has a 0.7 centimeter abrasion, just above the popliteal fossa. The posterior left leg, at the inferior border of the popliteal fossa has two, parallel, oblique purple pink contusions (each 3.1 x approximately 0.7 centimeters and separated by a 0.3 centimeter gap). A 1.7 centimeter cluster of brown ovoid, overlapping contusions (apparently 3) is on the anteromedial left mid-thigh; a 0.6 centimeter contusion is just lateral to this cluster. The anterior and anteromedial left thigh has multiple purple blue ovoid contusions over a 6 x 2 centimeter area; the contusions range in size from 0.7 centimeter to 1.3 centimeters. The medial left lower thigh has a 0.3 centimeter abrasion.

The anterolateral left thigh has a 0.8 x 0.7 centimeter obliquely oriented orange abrasion; medial to this injury is a sagittal, 1.1 centimeter linear abrasion. The anteromedial left lower thigh has 3 parallel, linear orange abrasions measuring 0.5, 0.8, and 1.5 centimeters from medial to lateral; the injuries are separated by 0.5 centimeter (medial) and 0.3 centimeter (lateral) gaps.

The anterolateral superior left knee has a 1.3 centimeter purple-brown contusion. The lateral left knee has a 2.8 x 2.2 centimeter purple-brown contusion with faint, central sparing; the posterior aspect has two 0.2 centimeter abrasions. Two, red-orange, irregular abrasions are on the anterolateral left knee (0.9 x 0.5 centimeters and 1.2 x 0.5 centimeters). Dense, focal clusters of punctate abrasions are on the left anterior knee. The anteromedial left knee has two purple-pink contusions, superiorly (2.1 centimeters and 0.9 centimeter from medial to lateral). An estimated 2 centimeter ovoid, transverse purple-pink contusion is on the medial lower left knee.

The lateral left thigh has multiple, frequently confluent brown-purple contusions over an area of 9.3 x 5.1 centimeters; within these contusions, the inferior lateral left thigh has a 0.4 centimeter ovoid red abrasion associated with a linear cluster of two linear 0.4 centimeter abrasions. The posterolateral left thigh has a clustered pair of 0.2 centimeter red abrasions.

Purple and purple-brown contusions are on the anterior and anteromedial left leg and range in size from 0.3 to 1.4 centimeters.

Scattered ovoid, purple-pink contusions involve the lateral and medial left ankle and the dorsum of the left foot. The lateral left ankle has multiple orange ovoid abrasions, several overlapping or forming a linear cluster; they range in size from 0.1 to 1 centimeter when clustered. Occasional punctate abrasions are on the medial left ankle and foot.

The posterolateral right mid-thigh has three injuries: a 1.8 x 1.2 centimeter red-brown

ovoid contusion with a central, punctate gray lesion; a sagittal 1.4 centimeter linear red abrasion; and a punctate abrasion. The right popliteal fossa has a sagittal 1.1 centimeter orange-red abrasion.

A cluster of yellow and orange abrasions is on the proximal anterior right thigh and includes a 1.2 centimeter abrasion and several punctate abrasions. The anterior proximal right thigh has a sagittal 2.3 x 0.8 centimeter red-orange abrasion. The anterior right mid-thigh has an oblique 1.8 x 0.8 centimeter purple contusion with central sparing imparting the appearance of a pair of linear parallel contusions (comment: may represent a "tram-track" pattern injury). The anterior and anteromedial aspects of the right lower thigh and knee have ovoid and fusiform purple-pink contusions (at least 13) ranging in size from 0.6 to 1.6 centimeters; among these are two ovoid contusions each containing a single punctate injury. The medial right lower thigh has two, parallel, coronal 0.8 x 0.2 centimeter faint red abrasions. The lateral right thigh has a nearly sagittal orange, linear abrasion. The lateral right mid-thigh has two ovoid pink-purple contusions. The posterolateral right thigh has a coronal, linear orange abrasion. Scattered punctate abrasions involve the lateral right lower thigh, lateral knee/proximal right leg, ankle, and dorsum of the right foot.

The anterior right leg has multiple purple-pink contusions from the proximal aspect to the mid-leg (at least 9), ranging in size from 0.3 to 2.3 centimeters. An ovoid red abrasion is on the anterior right leg, proximally. The posterior right ankle has multiple linear and fusiform orange abrasions ranging from 0.3 to 1.2 centimeters. A 0.5 centimeter purple contusion is on the posteromedial right heel. The sole of the right foot has a 0.6 centimeter blue contusion with a 0.3 centimeter, linear coronal abrasion. A 0.8 centimeter pink, faint contusion is on the plantar surface of the right heel, medially.

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

INTERNAL EXAMINATION

Internal examination descriptions below were authored by Dr. Enstice with the exception of the brain and spinal cord after fixation which was authored by me.

The body is opened by a standard Y-shaped thoracoabdominal incision. All body organs are in their normal anatomic positions, with no congenitally or surgically absent organs. The subcutaneous fat layer is less than 0.1 cm thick at mid-abdominal level. The serosal surfaces are intact.

Skull and cranial contents:

The calvarium and skull base have no acute fractures. The epidural and subdural spaces have no acute blood. The blood in the dural sinuses is not clotted. The leptomeninges are thin and transparent. The normally formed, 939 gram brain has a normal gyral configuration, with no subarachnoid hemorrhage, swelling or exudate. The brain is placed in formalin for additional fixation, as is the cervical spinal cord. The atlanto-occipital articulation is intact.

Brain and spinal cord after fixation:

The external and internal landmarks of the brain are normal. No injuries or gross pathologic processes are identified. The spinal cord has no injuries.

Neck:

The intact strap muscles, blood vessels, prevertebral soft tissues, cervical spine, hyoid bone and laryngeal and thyroid cartilages have no hemorrhage. The normally formed, patent larynx and trachea have no blockage, swelling, aspiration or abnormal tracheoesophageal communications. The endotracheal tube is in the tracheal lumen. The normally formed tongue has no trauma.

Cardiovascular system:

The normally formed 56 gram heart occupies its usual mediastinal site. The intact epicardial surfaces have no petechiae. The main coronary arteries arise normally, follow their normal distributions and are patent. The normally formed cardiac chambers and valves bear the usual size-position relationship. The foramen ovale is functionally closed. The firm brown myocardium has no areas of softening, discoloration or fibrosis. No abnormal communications exist between the cardiac chambers. Ventricular thicknesses are: left ventricle 1 centimeter, interventricular septum 1 centimeter, and right ventricle 0.2 centimeter. The endocardial surfaces have no hemorrhages or fibrosis. The cardiac valves have thin pliable leaflets with no fusion or vegetations. The chordae tendineae have no shortening or fusion. The valve circumferences measure: tricuspid valve 6.5 centimeter, pulmonic valve 3.6 centimeter, mitral valve 5.2 centimeter, and aortic valve 3.5 centimeter. The pulmonary trunk, aorta and the major arterial branches arise normally, are of normal caliber and follow their usual course. The ductus arteriosus is closed. Elasticity is normal. The venous system has no abnormalities.

Respiratory system:

The pleural surfaces of the normally formed 113 gram right and 109 gram left lungs are smooth and glistening, with a few subcapsular petechiae. The mottled pale pink-maroon parenchyma has no areas of consolidation. The patent mainstem and segmental bronchi are of normal caliber and contain maroon blood. The normally formed, patent pulmonary vessels have no thromboemboli.

Immunological system:

The pale tan-purple lobular 6 gram thymus occupies its usual anterior superior mediastinal site and has a few petechiae. The 42 gram spleen occupies its usual anatomic site and has a smooth intact maroon capsule covering firm maroon parenchyma. The major lymph node groups have no significant lymphadenopathy.

Gastrointestinal system:

The normally formed oropharynx is unobstructed. The patent esophagus is of normal

caliber, with smooth white mucosa. The gastroesophageal junction is intact. The stomach has intact tan mucosa, with no hemorrhage, ulcers or scars. The gastric lumen contains 5 milliliters of thick tan fluid. The small and large intestines have no intrinsic mucosal or mural lesions. The appendix is not inflamed. The small intestines contain 40 milliliters of thin tan nondescript fluid. The large intestines contain a small amount of brown stool. The lobular tan pancreas occupies its usual anatomic site, with no fat necrosis, hemorrhage or scars. The 374 gram liver occupies its usual anatomic site and has a smooth intact capsule covering firm brown parenchyma that cuts with usual resistance and has no lesions, hemorrhage or scars. The patent intrahepatic and extrahepatic ducts are of normal caliber. The gallbladder contains viscid bile and has velvety mucosa.

Endocrine system:

The symmetric thyroid gland has uniform brown parenchyma. The parathyroid and pituitary glands are normal. The normally formed adrenal glands collectively weigh 8 grams, and have no hemorrhage or masses.

Genitourinary system:

The normally formed 28 gram right and 31 gram left kidneys have capsules that strip with ease from the smooth maroon cortical surfaces with no broad-based cortical scars. Cut section shows good corticomedullary demarcation. The normal calyceal systems are not dilated or scarred. The patent ureters and renal vessels are of normal caliber. The urinary bladder contains residual urine and has smooth white mucosa. The internal genitalia are of a normally developing prepubescent female child.

Musculoskeletal system:

The supporting muscles are pale pink in color and the soft tissues are less than expected for the decedent's age. Major skeletal muscle groups are symmetric in development. The axial and appendicular regions of the skeleton are normal.

RADIOGRAPHIC STUDIES

No radiographic abnormalities are identified on postmortem full body x-rays (total of 9).

SPECIMENS

Samples of gastric contents, vitreous, urinary bladder washing, small intestinal contents, liver, cardiac blood, and bile are obtained. Cardiac blood and bilateral bacterial cultures are obtained. A nasopharyngeal viral swab is obtained. Tissue specimens are obtained and frozen.

MICROSCOPIC EXAMINATION

Sections of the kidneys, spleen, skeletal muscle (iliopsoas), adrenal glands, pituitary gland, colon, lungs, esophagus, stomach, pancreas, thymus, pharyngeal tonsils, small intestine, mesentery (slide #10), heart, liver, lymph nodes, trachea, thyroid gland,

abdominal wall (slide #16), lower lumbar area subcutaneous tissue (slide #17), iliopsoas muscle (slide #18), anorectal tissue (#19), chin laceration (#20), pelvic cavity tissue (#21), left buttock skin (#22), frontal scalp skin (#23), left lower inner peritoneal/pelvic cavity tissue (#30), hemidiaphragm (#31), lower inner lip (#32), a hand contusion (#33), right buttock skin (#34), the left frontotemporal scalp (#35), subcutaneous tissue deep to the bite trauma of the left leg (BM), dura mater (B1), brain (B2 – splenium; B3 – posterior left internal capsule; B4 – right hippocampus; B5 rostral pons), and spinal cord (B6 - cervical, thoracic, and lumbar levels) are examined. Histologic sections have been numbered for reference and do not imply sequences; numbering is from #1-#23 and is interrupted due to the multi-day nature of the postmortem examination – the second day of internal examination picks up at #30-#35.

The kidneys, spleen, skeletal muscle, adrenal glands, pituitary gland, lungs, esophagus, stomach, pancreas, heart, liver, lymph nodes, trachea, thyroid gland, pelvic cavity tissue (#21), dura mater, brain, and spinal cord have no significant histopathologic alterations.

Select sections have been stained for iron; the control slide is positive.

A section of the colon shows a focus of submucosal hemorrhage without inflammation or iron staining.

A section of the pancreas (slide #7) shows a small focus of peripancreatic soft tissue hemorrhage and minimal inflammation.

A section of the small intestine shows submucosal hemorrhage and nearby inflammatory margination; there is no iron staining.

A section of the mesentery shows soft tissue hemorrhage with minimal, predominantly neutrophilic inflammation; there is no iron staining.

A transverse section encompassing the trachea, thyroid gland, esophagus and associated soft tissues shows lateral soft tissue hemorrhage without inflammation.

A section of the abdominal wall shows diffuse hemorrhage with moderate inflammation including neutrophils and macrophages; there are rare areas of necrotic tissue; there is easily identifiable stainable iron in macrophages.

A section from the subcutaneous tissue of the lumbar area of the back shows skeletal muscle with hemorrhage and predominantly neutrophilic inflammation; there is no significant stainable iron.

A section of iliopsoas muscle (#18) shows hemorrhage and moderate neutrophilic inflammation; there is no iron staining.

A section from the anorectal tissues shows submucosal connective tissue and muscular inflammation (predominantly neutrophils) and diffuse hemorrhage; there is no iron staining.

A section of the chin laceration shows a deep cavity with marked, predominantly

neutrophilic inflammation and crushed collagen; the cavity has lining bacterial colonies; there is no iron staining.

The left buttock skin (#22) shows focal minimal subcutaneous adipose tissue hemorrhage; there is no iron staining.

A section from the frontal scalp skin (#23) shows minimal subcutaneous adipose tissue hemorrhage and predominantly neutrophilic inflammation; there is no stainable iron.

A section from the deep aspect of the left lower peritoneal cavity/pelvis (#30) shows inflamed, hemorrhagic skeletal muscle (predominantly neutrophils); there is no stainable iron.

A section from the diaphragm shows hemorrhage; there is no stainable iron.

A section from the inner lower lip trauma shows hemorrhage, necrosis, and predominantly neutrophilic inflammation; no viral inclusions are identified; hemosiderin is identified in macrophages on iron staining.

A section from one of the hand contusions shows deep hemorrhage with macrophages; iron staining shows abundant hemosiderin in macrophages.

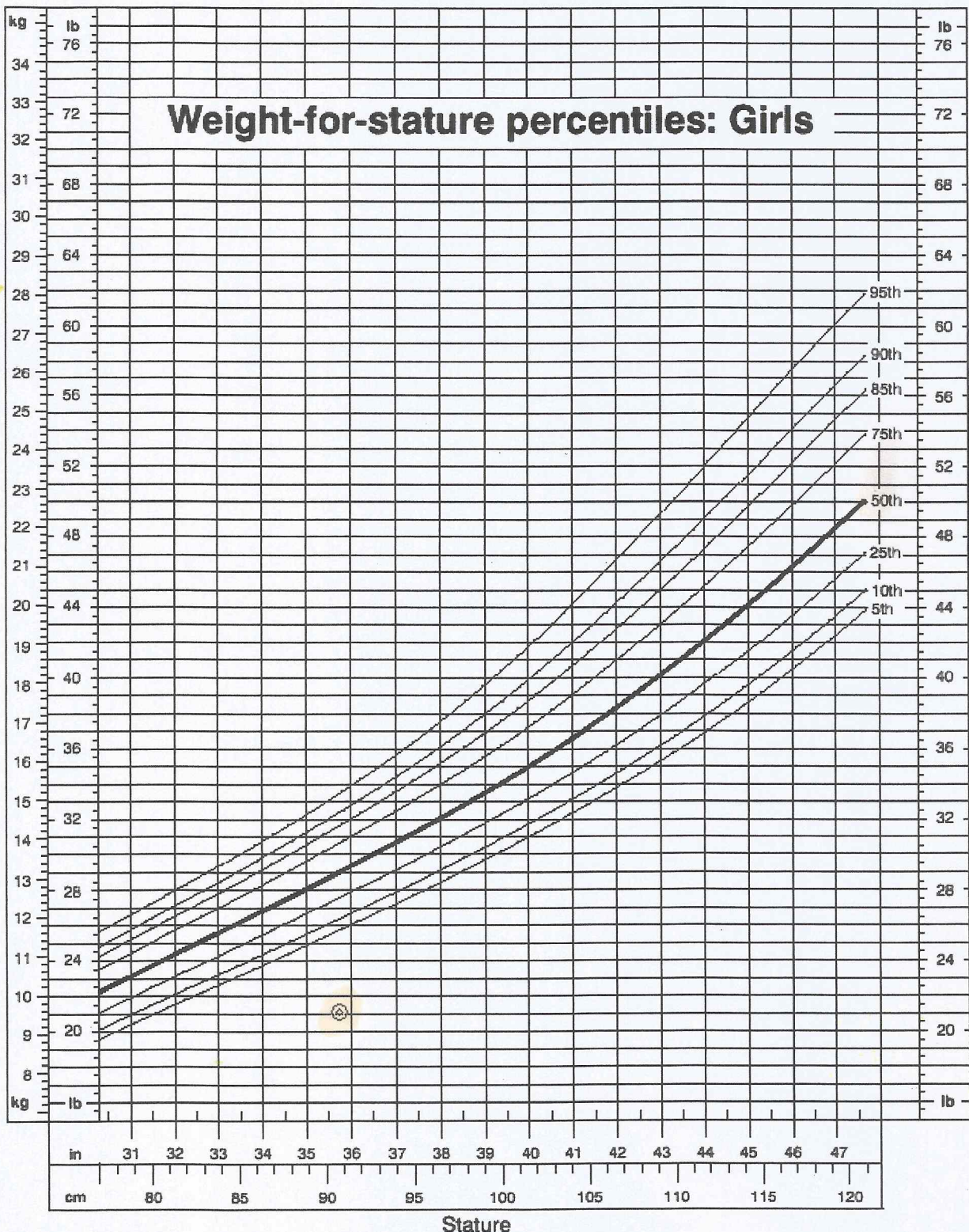
A section from the right buttock shows subcutis hemorrhage and a minimal amount of neutrophilic inflammation; there is no stainable iron.

A section from the left frontotemporal scalp shows neutrophilic inflammation associated with necrosis of the septal tissues in the subcutis; there is no significant stainable iron.

A section from the subcutaneous tissue under the bite trauma shows hemorrhage with scant inflammation; there is equivocal, minimal iron staining within cells in the hemorrhage which is largely cytoplasmic and diffuse.

The tonsils show tonsillitis.

CDC Growth Charts: United States

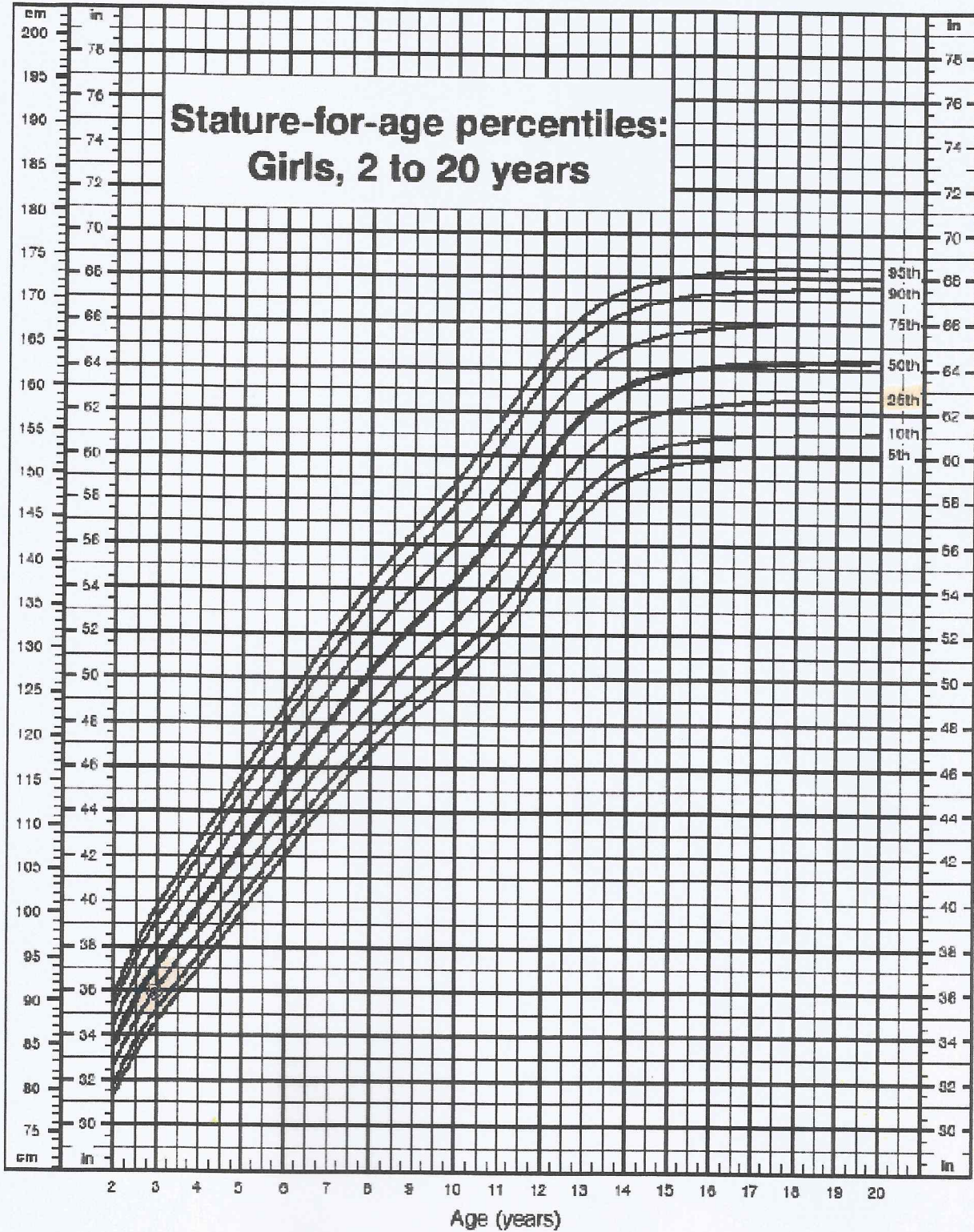


Revised and corrected November 21, 2000.

SOURCE: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).



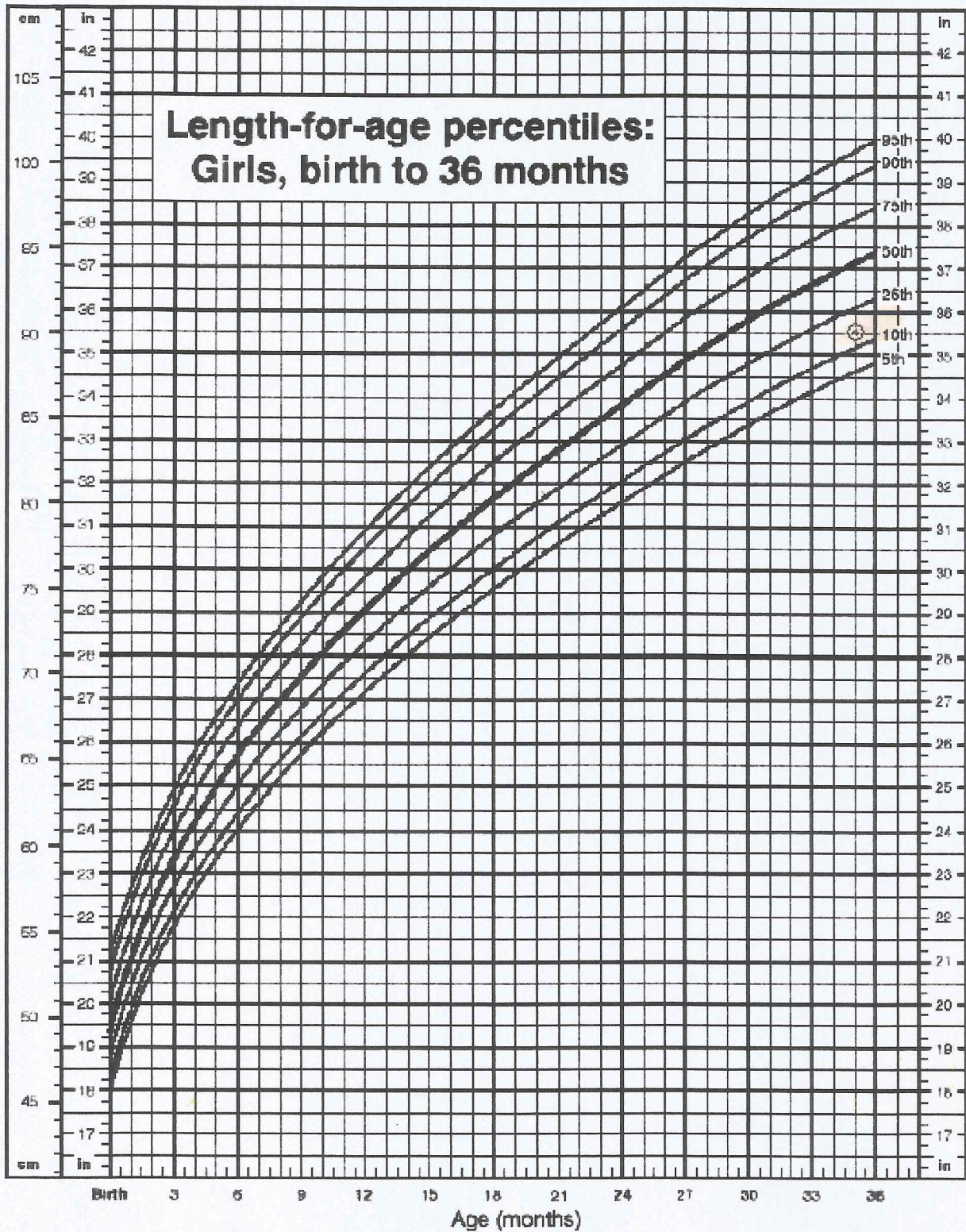
CDC Growth Charts: United States



SOURCE: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000)



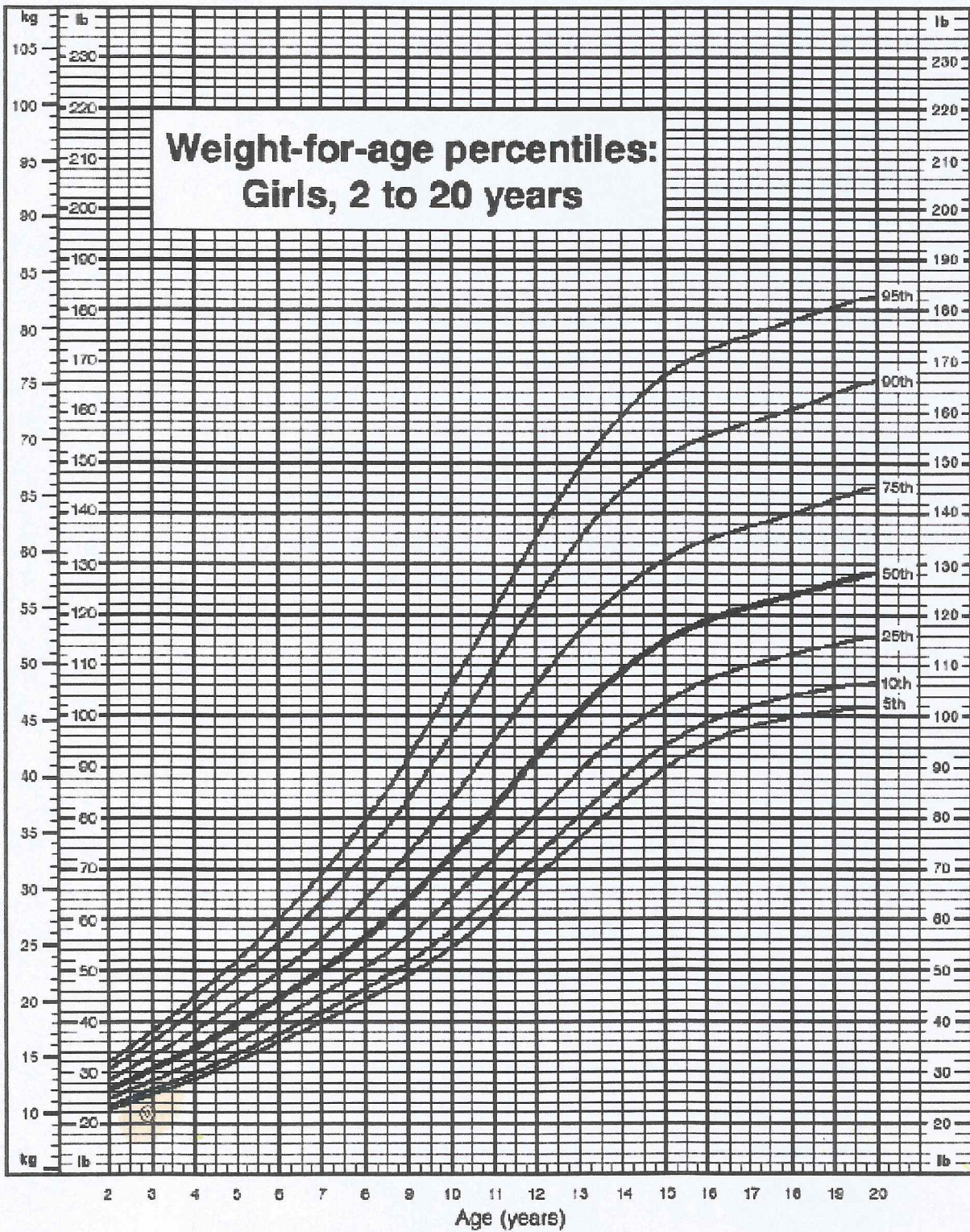
CDC Growth Charts: United States



SOURCE Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).



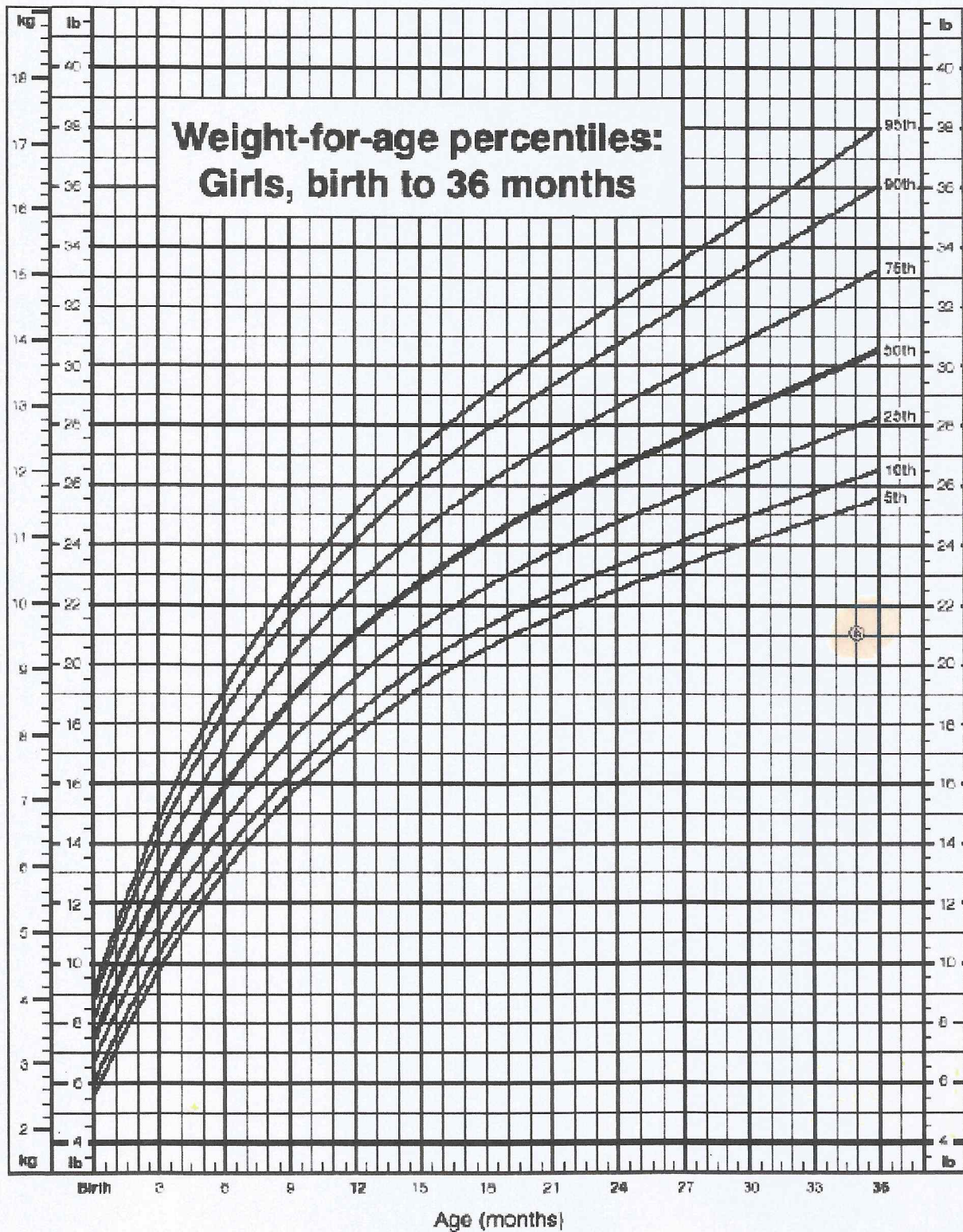
CDC Growth Charts: United States



SOURCE: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).



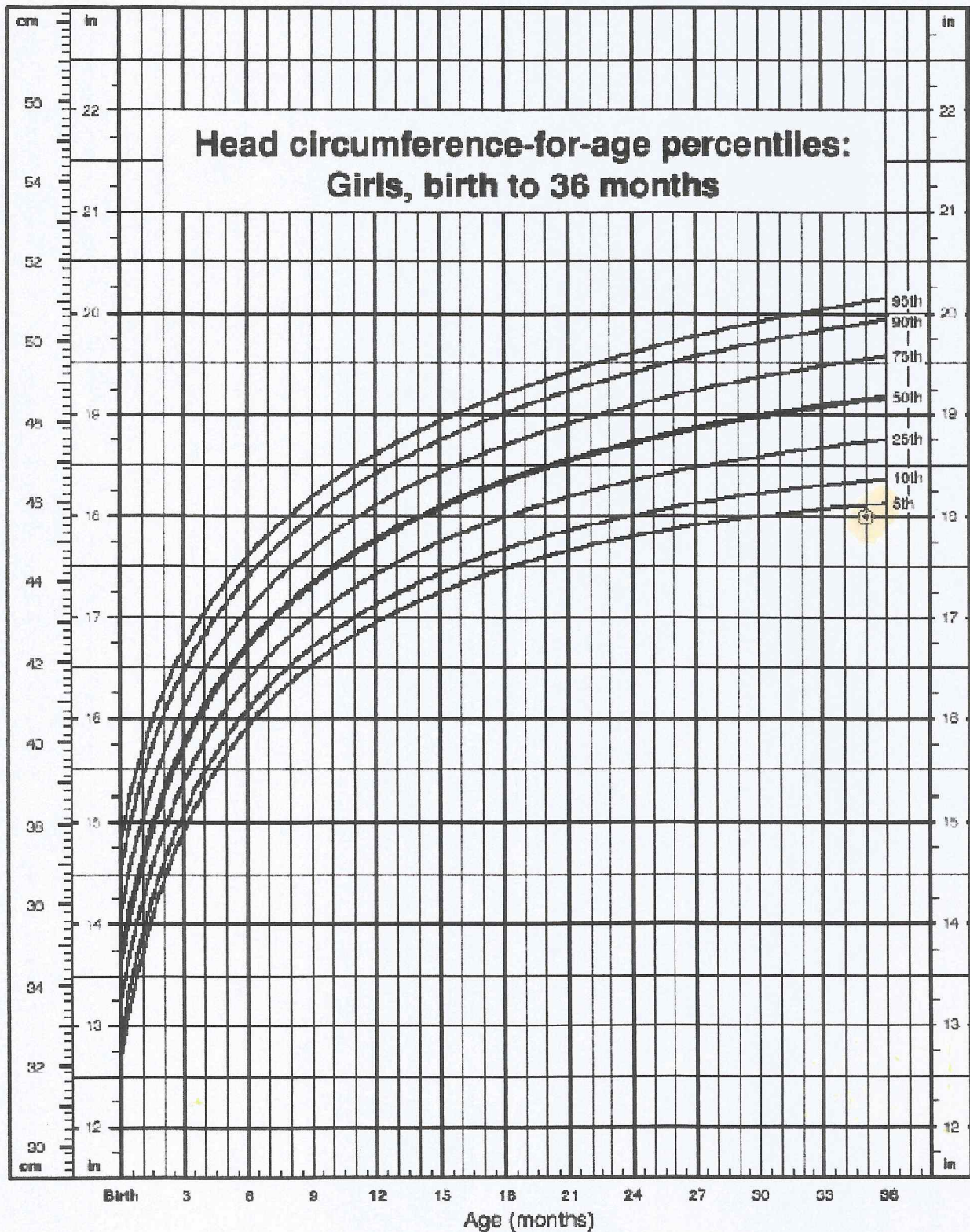
CDC Growth Charts: United States



SOURCE: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion, (2000)



CDC Growth Charts: United States



SOURCE: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000)



MARICOPA COUNTY OFFICE OF THE MEDICAL EXAMINER

REPORT OF TOXICOLOGICAL EXAMINATION

Case Number: 12-07434
Decedent: SAVANNAH KATHERYN CROSS
Date Submitted: 12/12/2012
Report Date: 03/20/2013

Specimens Collected: NASAL SWAB, LEFT LUNG, RIGHT LUNG, CARDIAC BLOOD,
URINARY BLADDER WASH, BLOT/FILTER PAPER, BILE,
GASTRIC, VITREOUS, SMALL INTESTINE CONTENT, MISC
SPECIMENS, LIVER

Medical Examiner: KATHLEEN M. ENSTICE, MD

RESULTS*:

Cardiac Blood: Positive for
Methamphetamine 2.29 mg/L
Amphetamine 0.64 mg/L
Diphenhydramine 0.87 mg/L
Nordiphenhydramine (diphenhydramine metabolite)
None detected for ethanol, methanol, isopropanol, acetone,
phencyclidine, cocaine, benzoyllecgonine, methadone, morphine,
codeine, benzodiazepines, barbiturates, phenothiazines, tricyclic
antidepressants, fentanyl, oxycodone, acid neutral drugs,
salicylates, acetaminophen, and carboxyhemoglobin saturation

Bile: Positive for
Methamphetamine
Amphetamine
Diphenhydramine
Nordiphenhydramine (diphenhydramine metabolite)
None detected for ethanol, methanol, isopropanol, acetone,
phencyclidine, cocaine, methadone, codeine, phenothiazines, and
tricyclic antidepressants

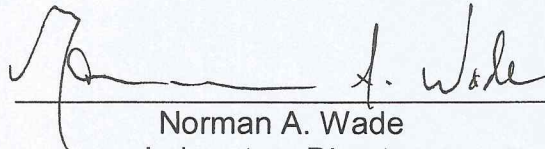
Gastric: Positive for
Methamphetamine 4.08 mg/L
Amphetamine 0.96 mg/L
Diphenhydramine 4.0 mg/L

Continued

KME

None detected for phencyclidine, cocaine, methadone, codeine,
phenothiazines, and tricyclic antidepressants

*If results are not listed for any specimen(s), that/those specimen(s) is/are deemed to be on "HOLD"



Norman A. Wade
Laboratory Director

Jurisdictional Agency: PHOENIX PD
By: svp, Tox.1/2000, DAWN


KINE



Maricopa County
Office of the Medical Examiner

Forensic Science Center
701 West Jefferson Street
Phoenix, Arizona 85007-2908
Phone: (602) 506-3322
Fax: (602) 506-1546

Dec. 6, 2013

Jeffrey Johnston, M.D. 
Maricopa County Forensic Science Center
Phoenix, Arizona

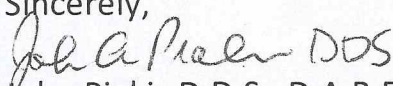
Re: Maricopa County Medical Examiner Case # 12-7434

Dear Dr. Johnston,

On Dec. 12, 2012, at the request of Dr. Enstice, I was asked to perform an examination on Case # 12-7434, Ms. Savannah Cross, for possible bite marks.

Many areas of trauma were observed and photographed but my focus of attention was the diffuse pattern type injury on the left calf that had the general characteristics of a bite mark but did not have the the class or individual characteristics. This circular contusion measured approximately 35 mm. on the larger arch and 30 mm. on the smaller arch.

In my opinion, these measurements are more consistent with an adult bite mark.

Sincerely,

John Piakis D.D.S., D.A.B.F.O.
Forensic Odontologist
Maricopa County
Phoenix, Arizona

November 27, 2013

Chief Greg McKay
Office of Child Welfare Investigations
3443 N Central Suite 913
Phoenix AZ 85012

Re: Savannah Cross
DOB: 12/30/09

Dear Chief McKay

At your request, I reviewed some photographs taken at the autopsy of this child done on December 12, 2012 by Dr. Enstice. Dr. Jeff Johnston of the Maricopa County Medical Examiner's Office was present and this review took place at the ME office on November 26.

The photographs I reviewed were of the genital and anal areas of this child. Findings are as noted below.

Images 36 – 51 of the genital area showed the following:

Vascular congestions vs bruising of the distal labial minora bilaterally, more pronounced on the patient's right side.

Diffuse ecchymosis of the periurethral area

Patchy petechial lesions on the external surface of the hymen and in the perihymeneal area and the medial labia

Possible dehiscence of the distal labia at their insertion site.

2 annular red bruises are seen in the mid perineum

Images 157-162 were of the anus and the perianal area. Findings include:

A patulous anal opening which is a normal postmortem finding

A linear contusion/abrasion, blue/purple in coloration, at the 2:00 position with the patient prone, measuring ~0.5 inch and extending from the anal skin folds externally.

An annular contusion, red/purple in color, adjacent to the linear contusion at the 3:00 position

An ecchymotic area at the 12:00 position with the patient prone

Blue/red discoloration just external to the skin folds on both sides; more pronounced on the superior left side.

Images 181-189 depict the genital area and show the following:

A bruise on the mons pubis.

A crescentic hymen with a tag at the 9:00 position. The same findings of petechiae and ecchymoses as seen in previous photos were also noted.

There are injuries to both the anal and genital areas which are indicative of blunt trauma. There are also some findings that could be post mortem artifact, and potentially iatrogenic (caused by medical intervention).

My understanding is that urethral catheterization may have been attempted at Maricopa Medical Center when she presented on December 11. If so, attempted catheterization may explain some of the injuries in the vestibule, particularly to the periurethral area. The injuries to the hymen and perihymeneal area are not typically seen with catheterization but if several blind attempts were made, it is possible. A careful review of the medical record may shed some light on this.

These same injuries can be seen with blunt trauma from other causes, including fondling or attempted penetration. They are not consistent with a straddle injury, which would be expected to cause more perineal injury.

The bruise on the mons is non specific and could be accidental in an ambulatory child. The anal findings are concerning for inflicted injury. The discoloration on either side, lateral to the skin folds, is suggestive of bruising. Microscopic evaluation of the autopsy sections should clarify that. There are bruises both at the 12:00 position and the 3:00 position (reference prone position) around the anus. The linear bruise/abrasion is suggestive of penetrating trauma. It is not consistent with constipation, which may when severe cause fissures in the anal canal, but does not cause bruising or abrasions this external.

In summary, this child has evidence of anogenital trauma, some of which may have been inflicted in the course of resuscitation, but some of which is very suspicious for penetrating injury. I would be happy to review any other records that are available.

Kathryn Coffman, MD
Division Chief, Child Protection Team
Phoenix Children's Hospital

Cc: Grey McKay, OCWI
Dr. Jeff Johnston, Maricopa County Medical Examiner's Office
Rachel Mitchell, MCAO



Maricopa County

Forensic Science Center

701 West Jefferson Street
Phoenix, Arizona 85007-2908
Phone: (602) 506-3322
Fax: (602) 506-1546

Sept. 16, 2013

Kathleen Enstice, M.D.
Maricopa County Forensic Science Center
701 W. Jefferson
Phoenix, Arizona 85007

Dear Dr. Enstice,

On Dec. 12, 2012, at your request, I was asked to perform an examination on a 3 year old female, Case # 12-7434, Ms. Savannah Cross, for possible bite marks.

Many areas of trauma were observed and photographed but my focus of attention was the pattern injury on the left calf that had the general characteristics of a bite mark.

On Dec. 13, 2013, photographs were taken again of the area utilizing the standard reference scale, namely the ABFO ruler.

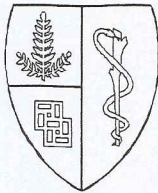
On Dec. 14, 2014, I excised the area following the ABFO guidelines and placed the specimen in formalin for further study.

Sincerely,

A handwritten signature in black ink that reads "John A. Piakis D.D.S.".

John A. Piakis, D.D.S., D.A.B.F.O.

Forensic Odontologist
Maricopa County
Phoenix, Arizona



LABORATORY OF SURGICAL PATHOLOGY

STANFORD UNIVERSITY MEDICAL CENTER
 300 PASTEUR DRIVE, ROOM H-2110, STANFORD, CALIFORNIA 94305
 TEL #: (650) 723-7211 FAX #: (650) 725-7409
 John Higgins, MD – Interim Director

***** THIS IS AN AMENDED REPORT *****

Patient: **CROSS, SAVANNAH**

Pathology No: **SHS-13-37930**

Med. Rec. No.: **28716264**

Date of Procedure:

Sex: F Age: 3

Date Received: 10/1/2013 2:21:00 PM

Date of Birth: 12/30/2009

Account No.: 131025452292

Physician(s):

JEFF JOHNSTON, MD

MARICOPA COUNTY FORENSIC SCIENCE CENTER

701 W JEFFERSON STREET, OFFICE OF MEDICAL EXAMINER

PHOENIX, AZ 85007

SPECIMEN SUBMITTED:

A. RIGHT EYE

B. LEFT EYE

CASE NOTE: This case is amended to correct the spelling of Dr. Jeff Johnston's last name (Changed from Johnson to Johnston). There is no change to the diagnosis.

DIAGNOSIS:

A. EYE, RIGHT, AUTOPSY

- FULL THICKNESS CORNEAL LACERATION WITH PARTIAL HEALING
- PARTIALLY ABSORBED CATARACT WITH MACROPHAGE RESPONSE
- IRIDOCORNEAL ADHESION (ANTERIOR SYNECHIA)

B. EYE, LEFT, AUTOPSY

- NORMAL AUTOPSY EYE

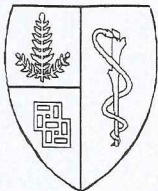
L. CHEN/ P. EGBERT NF 10/24/13

COMMENT:

The right eye cornea was penetrated by a sharp object that has produced a full thickness laceration and injured the anterior lens without extending further into the eye than the lens. In the time since the injury, the wound has partially healed, the iris has become adherent to the back of the cornea at the wound, and the broken lens has become cataractous and is partially absorbed. There is one very small retinal hemorrhage on microscopic examination which could be a result of the corneal perforation.

The left eye is normal.

Daniel Arber, M.D. – Medical Director



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***** THIS IS AN AMENDED REPORT *****

Patient: **CROSS, SAVANNAH**

Pathology No: **SHS-13-37930**

GROSS DESCRIPTION:

RIGHT EYE: The specimen received in formalin consists of a right eye measuring 20 mm AP x 21.5 mm H x 21.5 mm V. The cornea measures 11.5 mm H x 9.5 mm V, and the optic nerve measures 17 mm long. There are no defects on transillumination. Grossly, the globe appears somewhat deflated. There is 5mm linear full-thickness corneal perforation inferomedially with yellow-white fibrin deposits overlying the medial pupil and anterior capsule of the lens. There is also a 6mm corneal abrasion laterally. The sclera and optic nerve are normal. On horizontal cut sections, a fibrous membrane is seen extending from the anterior capsule of the lens through the anterior chamber to the full-thickness corneal laceration. There is a very thin traumatic cataract, suggesting a more chronic injury resulting in resorption of lens cortex. The iris and uveal tract are unremarkable. The vitreous is clear. There are no retinal hemorrhages seen. The optic nerve is normal.

LEFT EYE: The specimen received in formalin consists of a left eye measuring 20 mm AP x 21 mm H x 21 mm V. The cornea measures 11.5 mm H x 10.5 mm V, and the optic nerve measures 7 mm long. There are no defects on transillumination. Grossly, the globe appears somewhat deflated and shrunken due to loss of intraocular fluid. Externally the cornea, sclera, and optic nerve are normal. On horizontal cut sections, the cornea, anterior chamber, and lens are normal. The vitreous is clear. There is retinal pigment epithelium mottling throughout the posterior pole, likely secondary to handling post-mortem. A large retinal tear is seen along the ora serrata within the cap. No retinal hemorrhages are seen. The optic nerve is normal.

MICROSCOPIC DESCRIPTION:

RIGHT EYE

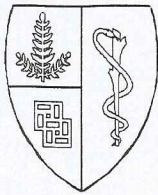
CONJUNCTIVA: The bulbar conjunctiva is unremarkable.

CORNEA: There is a partially-healed full thickness corneal laceration near the limbus. The anterior half has not healed and is partially lined by surface epithelium that has migrated down the wound. The posterior half is joined together by a cellular, scar comprising of keratoblasts. There is a corresponding break in Descemet's membrane with thinning of the adjacent endothelial cells that is highlighted by PAS staining. The iris is adherent to the posterior part of the wound. with fibrous posterior stromal scar and iris adherent to the posterior surface of the cornea.

ANTERIOR CHAMBER: The anterior chamber is normal.

IRIDOCORNEAL ANGLE STRUCTURES: The angle adjacent to the corneal wound is narrow and likely has peripheral anterior synechiae. The other angle structures are normal.

Daniel Arber, M.D. – Medical Director



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***** THIS IS AN AMENDED REPORT *****

Patient: **CROSS, SAVANNAH**

Pathology No: **SHS-13-37930**

IRIS: The iris structures that are not adherent to the cornea are normal. There is chronic inflammation within the iris that is adherent to the corneal laceration.

CILIARY BODY: There is mild chronic inflammation within the ciliary body.

LENS: The anterior capsule of the lens is broken. The lens is thin and cataractous changes are seen. There is a fibrous spindle cell proliferation around the lens. Foamy macrophages are seen adherent to the exposed lens material.

VITREOUS: The vitreous is normal.

RETINA: There is autolysis of the photoreceptors. The retina is otherwise normal. There is a single small hemorrhage within the nerve fiber layer at the equator.

CHOROID: The choroid is normal.

SCLERA: The sclera is normal.

OPTIC NERVE: The optic is normal. No blood is seen within the subarachnoid or subdural spaces. PAS staining of the optic nerve is normal.

LEFT EYE

CONJUNCTIVA: The bulbar conjunctiva is unremarkable.

CORNEA: The corneal is normal on H&E and PAS staining.

ANTERIOR CHAMBER: The anterior chamber is normal.

IRIDOCORNEAL ANGLE STRUCTURES: The angle structures are normal.

IRIS: The iris is normal.

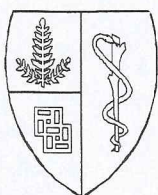
CILIARY BODY: The ciliary body is normal.

LENS: The lens is normal

VITREOUS: The vitreous is normal.

RETINA: There is autolysis of the photoreceptors and retinal pigment epithelium. The retina is otherwise normal.

Daniel Arber, M.D. – Medical Director



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***** THIS IS AN AMENDED REPORT *****

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PAS staining of the optic nerve is normal.

CLINICAL HISTORY: 2 year and 11-month old girl with right ocular changes after possible traumatic event November 2012. Patient died in early December 2012 under suspicious circumstances with multiple traumatic injuries and exposure to methamphetamine.

OPERATION: [REDACTED]

OPERATIVE FINDINGS: [REDACTED]

CLINICAL DIAGNOSIS: [REDACTED]

I have reviewed the specimen and agree with the interpretation above.
PETER EGBERT, M.D.

Electronically signed 10/17/2013 5:03 PM

Amendment #1
PETER EGBERT, M.D.

Electronically signed 10/24/2013 3:15 PM

Daniel Arber, M.D. – Medical Director