

Meeting with Dr. Carol Allan 21 April 2015@ 1147 hours

On 21 April 2015 at approximately 1147 hours, Detectives Syreeta Teel and Corey Alston met with Dr. Carol Allan. The meeting took place at the Office of the Chief Medical Examiner located at 900 W. Baltimore Street. During the course of the meeting, Dr. Allan was verbally provided with information regarding the chain of events that led to the arrest of Freddie Grey and the events that followed. Dr. Allan took notes relative to the information that was provided. In addition, the following information was obtained from Dr. Allan concerning the injuries that Mr. Grey sustained.

The most significant injury was found at the C4 and C5 areas of the spine. The joints located at right side of the spine had shifted to the left causing a dislocation. The aforementioned injury would not have rendered the spinal cord unstable.

The left side of the spinal cord was fractured and the ligaments were found to be ruptured. This injury would render the spinal cord unstable as it causes compression of the spinal cord. This injury would lead to paralysis of the upper and lower extremities as well as respiratory distress. Dr. Allan further indicated that this type of injury is typically found in victims of diving accidents. The injury is caused by abrupt movement of the head in a manner forcing the chin toward that chest (flexion injury). Any movement of Mr. Grey following the injury would worsen his condition.

The victim sustained abrasions to both wrists that showed signs of healing at the time of the post mortem examination. Signs of hemorrhaging were found underneath the skin where the abrasions were found.

Faint scratches were found on the victim's ankle; however, there were no signs that the victim struggled against the leg restraints.

Lacerations were found on the victim's left and right temple. The abrasions also showed signs of healing. Sutures were found at the right temple. The sutures were in place secondary to hemorrhaging. Signs of hemorrhaging were found underneath the skin of the left temple.

The victim sustained two abrasions to the left cheek. Signs of hemorrhaging were found at the base of the victim's skull. One abrasion was found on the left shoulder. Scabs and swelling were found at the lips; however, this could have been caused at Shock Trauma during the insertion of the endotracheal tube. Signs of bleeding were found at the victim's neck more than likely as a result of a surgical procedure which was performed in an attempt to decompress the victim's spinal cord.

Abrasions were also found on the left and right knee. Indicators of soft tissue hemorrhaging were found at the victim's chin. Dr. Allan also performed what was described as a cut down procedure. During this procedure the posterior of the victim's skin was cross sectioned from top to bottom in search of additional signs of injury. None were found.

On 21 April 2015 at approximately 1420 hours, a prisoner transport vehicle from the Southwest District arrived at the Office of the Chief Medical Examiner as Dr. Allan wished to view the interior of the

Meeting at Shock Trauma 24 April 2015@ 1242 hours

On 24 April 2015 at approximately 1242 hours, Detectives Syreeta Teel, Corey Alston and Mark Veney met with Dr. Thomas Scalea and Dr. Deborah Stein. The meeting took place in the conference room located on the 4 south Intensive Care Unit of Shock Trauma.

The purpose of the meeting was to obtain an overview of the victim's condition and treatment during his stay at Shock Trauma. The following information was obtained.

The victim, Freddie Grey suffered a spinal cord injury at C4 and C5. At times the victim would experience seizures. As a result, medications were given to induce a coma in an effort to counteract the seizures. The victim also suffered an anoxic brain injury due to a lack of oxygen to the brain. Dr. Scalea advised that the victim ultimately died subsequent to respiratory failure when his lungs failed. The meeting was concluded on 24 April 2015 at approximately 1300 hours.

Report Prepared by Det. Corey Alston (E986)

Meeting with Dr. Carol Allan 24 April 2015@ 1308 hours

On 24 April 2015 at approximately 1308 hours, Detectives Syreeta Teel, Corey Alston and Mark Veney met with Dr. Carol Allan. The meeting took place at the Office of the Chief Medical Examiner. During the course of the meeting, Dr. Allan asked follow up questions relative to the positioning of Freddie Grey's body at various times while he was inside the prisoner transport vehicle. Dr. Allan took notes relative to the information that was provided. The meeting was concluded on 24 April 2015 at approximately 1325 hours.

Report Prepared by Det. Corey Alston (E986)



STATE OF MARYLAND
OFFICE OF THE CHIEF MEDICAL EXAMINER



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I hereby certify this document to be a true copy of the original record of **Case Number 15-03640** on file at the Office of the Chief Medical Examiner, State of Maryland.

Signed: Carol H. Allan
Carol H. Allan, M.D.
Assistant Medical Examiner

I hereby certify that, on this 30th day of **April 2015** before me, the subscriber, a Notary Public of the State of Maryland, **Carol H. Allan, M.D.**, Assistant Medical Examiner for the State of Maryland, personally appeared and made oath in due form of law that the attached report of **Case Number 15-03640** is a true copy of the Original Record on file at the Office of the Chief Medical Examiner for the State of Maryland located at 900 West Baltimore Street, Baltimore, Maryland 21223, and that she is duly authorized to make this affidavit under the provisions of §5-311, Annotated Code of Maryland (Health-General).

As witness my hand and notary seal the day and year last above written.

Tiffinney Green
Notary Public

My commission expires _____

TIFFINNEY GREEN
NOTARY PUBLIC
BALTIMORE CITY
MARYLAND
MY COMMISSION EXPIRES JUNE 11, 2016

Name: FREDDIE CAROLS GRAY JR. Case Number: 15-03640	POST MORTEM EXAMINATION REPORT OFFICE OF THE CHIEF MEDICAL EXAMINER STATE OF MARYLAND	PAGE 1
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An autopsy was performed on the body of **Freddie Carlos Gray Jr.** at the Office of the Chief Medical Examiner for the State of Maryland on the 20th day of April 2015.

EXTERNAL EXAMINATION:

The body was that of an unclad, severely anasarctous, well-developed, well-nourished African American male. The body weighed approximately 202 pounds, was approximately 5'9" in length, and appeared compatible with the reported age of 25 years. The body was cold. Rigor was present to an equal degree in all extremities. Lividity was present and fixed on the posterior surface of the body, except in areas exposed to pressure. The scalp hair was dark brown and curly and exhibited multiple, circular patches of a white gel-like paste. Facial hair consisted of a moustache and beard. The irides appeared brown in color. The corneae were clear. The conjunctivae were pink without evidence of petechial hemorrhages. The sclerae were edematous. The external auditory canals were unremarkable; the external nares and oral cavity were free of foreign material and abnormal secretions. The nasal skeleton was palpably intact. The lips were edematous and exhibited pressure abrasions. The teeth were natural with partial metal caps on the right upper central and left lateral incisors. The neck organs were midline. The chest was symmetrical. No injury of the ribs or sternum was evident externally. The abdomen was tense to palpation. Healed surgical scars were not readily apparent. The extremities were symmetrical without absence of digits. Edema blisters were on the lateral and medial aspects of the proximal thighs. A 3/8" dark brown lesion was on the thenar eminence of the left hand. Healed scars were on the right knee and both shins. The fingernails were intact. Tattoos were noted on the left forearm and left hand. Needle tracks were not observed. The external genitalia were edematous and those of an adult male. The posterior torso was without note; the anus was unremarkable.

DO NOT DUPLICATE
EVIDENCE OF THERAPY:

Endotracheal and orogastric tubes emerged from the mouth and were associated with underlying pressure abrasions of the lower lip. A cervical collar was around the neck. A sutured, granulating surgical incision was on the anterior right side of the lower neck associated with post surgical changes in the right strap muscles and the presence of orthopedic hardware on the anterior aspect of the cervical vertebral column (status posterior anterior fixation of C4/C5 vertebral column). A vertically-oriented sutured, granulating surgical incision was on the back of the neck associated with post-surgical changes and edema (status post open reduction of C4-C5 locked facet joints, C3 to C6 laminectomies and internal fixation). Two surgical sutures were in the bilateral superomedial scapular regions, unassociated with an identifiable injury or surgical incision. A 3/8" granulating laparoscopic incision was in the left upper quadrant of the abdomen. Intravascular access catheters were in the right subclavian (triple lumen), the dorsal right forearm and left antecubital fossa (single lumen) and in the right femoral region (arterial line). A venipuncture site was in the right antecubital fossa. An area of faint subcutaneous hemorrhage was identified on the anterior aspect of the left shin (status post left intraosseous trochar placement). By report, an unsuccessful attempt of a right radial arterial line was made during the initial interventions on admission.

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EVIDENCE OF INJURY:

A granulating, inverted "V"-shaped abraded laceration, with the open side directed in an inferior direction and measuring 1 x 1/2" on the anterior and posterior legs, was on the right temporal scalp and had a 1/4" circular laceration in the apex of the angle that penetrated the full thickness of the scalp. This patterned injury was associated with a underlying 1-1/2 x 1/4" subscalp hemorrhage. A 1 x 1/4" a healing abrasion was on the left temporal scalp, which was associated with a 2 x 1/2" subscalp hemorrhage. 1/4" and 3/8" healing, superficial abrasions were on the lateral aspect of the left cheekbone. No palpable fractures of the nasofacial skeleton or injuries of the frenula or buccal mucosa were identified. On reflection of the parieto-occipital scalp, a 1-1/2 x 1" hematoma was identified on the left lateral occipital scalp, overlying the occipital prominence at the base of the skull. No fractures of the skull or evidence of extra-axial hemorrhage was identified. Examination of the brain revealed edema and more prominent secondary hypoxic-ischemic changes of the parietal and occipital lobes and the medulla of the brainstem, with frank necrosis at the cervico-medullary junction.

A posterior neck dissection revealed extensive post-surgical changes, mild organizing hemorrhage and edema of the paravertebral soft tissue and epidural hemorrhage of the cervical spinal canal; no evidence of scar tissue or significant fibrosis was identified. Examination of the cervical spinal cord revealed focal epidural hemorrhage posteriorly and extensive subarachnoid hemorrhage. Hemorrhagic contusions involved the entire cervical region. Secondary changes were identified in the thoracic and lumbosacral cord, but no traumatic lesions were identified. An anterior neck dissection revealed post-surgical changes of the right anterior strap muscles. The hyoid bone and thyroid cartilage were intact.

A 2 x 3/4" healing abrasion was on the top of the medial left shoulder. A 3 x <1/16" superficial linear abrasion was on the lateral left side of the upper back. Reflection of the skin of the posterior torso revealed watery, superficial fascial hemorrhage in scapular region of the left side of the back (5 x 2") and the inferior costal region of the right side of the back (4 x 3"). No deep soft tissue hemorrhage was identified in examination of the anterior, lateral or posterior aspects of the torso or of the buttocks. No fractures of the ribs, thoracolumbar vertebral column or pelvis or injuries to the internal organs of the torso, abdomen or pelvis were identified.

Fine, healing linear abrasions, ranging in size from 3/4" to 1-1/4" were on the dorso-medial and dorso-lateral aspects of the left wrist and were associated with a 2 x 2" area of subcutaneous hemorrhage of the antero-lateral aspect of the wrist, identified on reflection of the skin. Similar healing, linear abrasions, ranging in size from 1/4" to 3/4" were on the dorso-medial aspect of the right wrist and a 1/8" punctate abrasion was on the dorso-lateral aspect. Reflection of the skin of the right wrist revealed a 2 x 2" area of subcutaneous hemorrhage on the antero-lateral aspect of the wrist. Reflection of the skin of the upper extremities revealed severe edema but was negative for areas of hemorrhage, except in areas

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of known medical intervention. No fractures of the long bones of the upper extremities were palpable or identified on radiographic examination.

A 1-1/2 x 3/8" healing, superficial abrasion was on the inferior aspect of the right knee and a 1/4" abrasion was on the lateral aspect of the right knee. 1/4" and 1/8" healing, superficial abrasions were on the medial and lateral aspects of the left knee, respectively. Two, 1/2 x 1/16" slightly curvilinear, vertically-oriented, parallel abrasions were on the lateral aspect of the right ankle and were associated with a 1 x 3/4" area of faint subcutaneous hemorrhage. A 1-1/2 x 3/4" area of similar, faint subcutaneous hemorrhage was identified on reflection of the skin of the lateral left ankle. Reflection of the skin of the lower extremities revealed severe edema but was otherwise negative for superficial or deep soft tissue hemorrhage. No fractures of the long bones of the lower extremities were palpable or identified on radiographic examination.

INTERNAL EXAMINATION:

BODY CAVITIES:

The body was opened by the usual thoraco-abdominal incision and the chest plate was removed. No significant adhesions were present in any of the body cavities. Serous fluid collections were recovered the chest (150 ml. right and left) and abdominal (800 ml.) cavities and the pericardial sac (30 ml.). All body organs were present in the usual anatomical position. There was no internal evidence of blunt force or penetrating injury to the thoraco-abdominal region.

HEAD: (CENTRAL NERVOUS SYSTEM)

See "Evidence of Injury." The scalp was reflected. The calvarium of the skull was removed. The dura mater and falx cerebri were intact. There was no recent or remote epidural or subdural hemorrhage present. Sections through the cerebral hemispheres, the brainstem and cerebellum showed secondary changes associated with the spinal cord and vertebral artery injury, but no other abnormalities. The brain weighed 1380 grams (see "Neuropathology Report").

NECK:

See "Evidence of Injury." Examination of the soft tissues of the anterior and posterior neck, including strap muscles and large vessels, revealed no non-traumatic abnormalities or evidence of remote injury. The hyoid bone and larynx were intact. Bilateral triticeal cartilage nodules were identified in the inferior aspects of the thyrohyoid ligaments with incomplete development of the right superior horn of the thyroid cartilage.

CARDIOVASCULAR SYSTEM:

The pericardial surfaces were smooth, glistening and unremarkable. The coronary arteries arose normally, followed the usual distribution and were widely patent, without evidence of significant atherosclerosis or thrombosis. The valves were unremarkable. The chambers exhibited the usual positional relationship. The left ventricular free wall measured 1.5 cm, the interventricular septum 1.8 cm, the right ventricle 0.2 cm in thickness, and the left ventricular cavity 2.5 cm in diameter. The trabeculae of the right ventricle extended

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into the apex. The myocardium was red-brown and firm without gross evidence of fibrosis or necrosis. The atrial and ventricular septa were intact. The aorta and its major branches arose normally, followed the usual course and were widely patent, free of significant atherosclerosis and other abnormality. The venae cavae and their major tributaries returned to the heart in the usual distribution and were free of thrombi. The heart weighed 370 grams.

RESPIRATORY SYSTEM:

The upper airways were clear of debris and foreign material. The trachea distal to the carina contained tan-white, viscous secretions; the mucosal surfaces were slightly erythematous. The pleural surfaces were gray-pink, smooth, glistening and unremarkable bilaterally. The pulmonary parenchyma was congested and red-purple, exuding copious amounts of bloody fluid; no focal lesions were noted. The pulmonary arteries were normally developed, patent and without thrombus or embolus. The right lung weighed 930 grams; the left 920 grams.

LIVER & BILIARY SYSTEM:

The hepatic capsule was smooth, glistening and intact, covering dark red-brown, congested parenchyma with no focal lesions noted. The gallbladder contained yellow-green-brown, mucoid bile; the mucosa was velvety and unremarkable. The extrahepatic biliary tree was patent, without evidence of calculi. The liver weighed 1580 grams.

ALIMENTARY TRACT:

The tongue exhibited no evidence of recent injury. The esophagus was lined by gray-white, smooth mucosa. The gastric mucosa was arranged in edematous and erythematous rugal folds; the lumen contained 20 ml. of red-brown, viscous secretions. The mesenteric soft tissue and the serosal and luminal surfaces of the small and large bowel were edematous. The pancreas had a normal tan-pink lobulated appearance and the ducts were clear. The appendix was unremarkable.

GENITOURINARY SYSTEM:

The renal capsules were smooth and thin, semi-transparent and stripped with ease from the underlying smooth, red-brown cortical surfaces. The cortices were delineated from the medullary pyramids, which were red-purple and unremarkable. The calyces, pelves and ureters were unremarkable. The urinary bladder was empty of urine; the mucosa was gray-tan and unremarkable. The testes and prostate gland and seminal vesicles were without note. Organized thrombi were identified in the periprostatic venous plexus. The right kidney weighed 150 grams; the left 170 grams.

RETICULOENDOTHELIAL SYSTEM:

The spleen had a smooth, intact capsule covering red-purple, moderately firm parenchyma; the lymphoid follicles were unremarkable. The regional lymph nodes appeared normal. The spleen weighed 160 grams.

ENDOCRINE SYSTEM:

The thyroid and adrenal glands were unremarkable.

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MUSCULOSKELETAL SYSTEM:

See "Evidence of Injury." Muscle development was normal. No non-traumatic bone or joint abnormalities were noted.

MICROSCOPIC EXAMINATION:

Lungs: early hyaline membrane formation; focal acute pneumonia; focal aspiration associated with bacterial overgrowth and acute inflammation, fresh and organizing alveolar hemorrhage; focal subpleural scar with pigmented macrophages; no evidence of acute or chronic reactive airway disease

Heart: patchy areas of re-perfusion injury

Liver: no significant pathologic findings

Kidney: autolysis; scattered pigmented casts

PATHOLOGIC DIAGNOSES:

- I. Subgaleal hematoma of lateral left occipital scalp
- II. Healing, patterned abraded laceration of right temporal scalp, associated with subscalp hemorrhage
- III. Healing abrasions of left temporal scalp and lateral left cheekbone
- IV. Healing abrasion of top of left shoulder
- V. Healing linear abrasions of both wrists and right ankle
- VI. Subcutaneous hemorrhage of lateral wrists and lateral ankles
- VII. Fascial hemorrhage of left scapular region and right postero-inferior costal margin
- VIII. No evidence of facial, skull, long bone or rib fractures
- IX. No evidence of deep muscle hemorrhage of torso or extremities
- X. Intact hyoid bone and laryngeal cartilage; triticeal cartilage nodules in thyrohyoid ligaments and incomplete development of right superior horn of thyroid cartilage
- XI. Unstable C4/C5 fracture/dislocation with jumped/locked right facet joint, left facet superior and inferior articular process fractures and intervertebral disc disruption with high grade spinal canal compromise (CT, 4/12/2015)
- XII. Left vertebral artery injury (CT, 4/12/2015)
- XIII. Rupture of anterior and posterior spinal ligaments, ligamentum flavum and interspinous ligaments at C4/C5, extensive posterior soft tissue edema, small anterior fluid collection and tiny left intraventricular hemorrhage (MRI, 4/12/2015)
- XIV. Near complete transection of spinal cord, left greater than right (MRI, 4/12/2015)
- XV. Diffuse cord edema from C2 to C7/T1 (MRI, 4/12/2015); cord edema extending into brainstem and below T1 (MRI, 4/15/2015)
- XVI. Status post diagnostic laparoscopy for metabolic acidosis; no intra-abdominal process identified (4/13/2015)
- XVII. Multiple punctate cerebellar and left thalamus infarcts (MRI, 4/12/2015)
- XVIII. Status post open reduction of C4/C5 locked facet, laminectomy of C3-C6, discectomy of C4-C5 and internal fixation of C4 and C5 (4/14/2015)
- XIX. Hemorrhagic contusion and necrosis of the cervical cord; no gross evidence of laceration
- XX. Secondary changes
 - i. Anasarca
 - ii. Early diffuse alveolar damage and focal pneumonia of lungs
 - iii. Reperfusion injury of heart
 - iv. Cerebral edema (CT, 4/16/2015) and confirmed on gross examination
 - v. Hypoxic-ischemic encephalopathy; no gross evidence of infarcts in basal ganglia or cerebellum
 - vi. Necrosis of the cervico-medullary junction
 - vii. Central cord necrosis of low cervical and high thoracic cord
 - viii. Petechial hemorrhages of the cervical, thoracic and lumbosacral cord, non-traumatic

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OPINION:

This 25 year old, African American male, **Freddie Carlos Gray Jr.**, died of a **Neck Injury** sustained as an unbelted occupant of a police transport van. The cause and manner of death are based on autopsy findings, review of medical records and the investigation of the circumstances surrounding the death, including available witness statements, captured scene videos and examination of the police transport vehicle. By report, the deceased was taken into custody following a police bike and foot pursuit on 4/12/2015. Upon being apprehended, Mr. Gray placed himself on the ground and his hands were cuffed behind his back. He reportedly asked for an inhaler, but none was found on his person. He was assisted to the police van on Presbury Street (1st stop), exhibiting both verbal and some physical resistance. Mr. Gray is seen on video entering the right hand compartment of the van, bearing weight on his legs and actively speaking. He was reportedly placed on the metal bench running from front to back along the outside wall of the van (the bench measures approximately 13" wide and 8' long allowing for 19" between the metal wall dividing the van into two discrete compartments and the bench edge). After the inner and outer doors were closed, it is reported that Mr. Gray could be heard yelling and banging, causing the van to rock. Originally the destination of the van was Central Booking; however, several intervening stops were made before it was finally diverted to the Western District headquarters. The 2nd stop was several blocks down (on Baker Street) to place an identification band and leg restraints on Mr. Gray. Reportedly, Mr. Gray was still yelling and shaking the van. He was removed from the van and placed on the ground in a kneeling position, facing the van doors, while ankle cuffs were placed, and then slid onto the floor of the van, belly down and head first, reportedly still verbally and physically active. The 3rd stop was captured on video at Mosher Street and North Fremont Avenue, where the van driver stopped the van, got out and looked in the back of the van. The van proceeded to the 4th stop (at Dolphin Street and Druid Hill Avenue) where the van driver called for assistance to check on Mr. Gray. The assisting officer opened the doors and observed Mr. Gray lying belly down on the floor with his head facing the cabin compartment, and reportedly he was asking for help, saying he couldn't breathe, couldn't get up and needed a medic. The officer assisted Mr. Gray to the bench and the van continued on its way until it was diverted to pick up another individual who was in custody. At this 5th stop (at North Avenue and Pennsylvania Avenue), Mr. Gray was found kneeling on the floor, facing the front of the van and slumped over to his right against the bench, and reportedly appeared lethargic with minimal responses to direct questions. The second individual was placed in the left hand compartment of the van and the vehicle was driven to the Western District headquarters. By report, this second detainee said that he heard Mr. Gray banging and kicking through the metal divider. On arrival, Mr. Gray was found in a kneeling position, unresponsive and not breathing. Emergency medical services were activated and he was transported to University Medical Center with active resuscitation.

At the hospital resuscitation attempts were successful with the return of spontaneous circulation. Mr. Gray exhibited dilated pupils and showed no motor response to stimuli. No obvious external injuries, except for an abrasion (skin scrape) on the top of the left shoulder were identified on initial examination. Admission toxicological testing was positive for the presence of opiates and cannabinoid in the urine. A computed tomography scan (CT) of the head and neck was negative for intracranial bleeding or fractures of the facial bones or skull, but demonstrated an unstable C4/C5 fracture/dislocation with high grade spinal canal compromise as well as a left vertebral artery injury. A magnetic resonance imaging (MRI) study, performed revealed a tiny left interventricular hemorrhage, near transection of the spinal cord, rupture of

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multiple stabilizing ligaments at the level of C4/C5, extensive edema of soft tissues of the posterior neck region and a small fluid collection anterior to C3 through C7; no other abnormalities of the uninjured cervical vertebral column, spinal cord or adjacent soft tissues were described in the report. Mr. Gray was stabilized and closed reduction of the vertebral dislocation was attempted without success. He was taken to the operating room on 4/14/2015 for C3-C6 laminectomy and fusion of C4 and C5. The operative note made no mention of healed or healing scars on the neck or evidence of previous injury or surgical interventions. Mr. Gray remained in a comatose state with continual electroencephalogram monitoring that indicated diffuse cerebral dysfunction. Follow up CT and MRI scans showed extension of the spinal cord edema into the brainstem and into the distal cervical spinal cord. On 4/19/2015 as Mr. Gray was being positioned he had an episode of severe hypertension and tachycardia followed by hypotension and bradycardia and eventually, pulseless electrical activity. Despite resuscitative efforts, Mr. Gray was pronounced on 4/19/2015.

At autopsy, the external examination was significant for generalized edema and evidence of medical therapy. A healing, patterned abraded laceration (scraped skin tear) was on the right temple, a healing abrasion on the left temple, small healing abrasions on the left cheekbone, and healing linear abrasions on the wrists and right ankle. Reflection of the scalp revealed a subscalp hematoma on the lateral aspect of the left side of the back of the head just superior to the neck region, and focal scalp hemorrhage under the abraded laceration on the right temple. Reflection of extensive areas of skin of the torso and the upper and lower extremities identified areas of hemorrhage on the lateral aspects of the wrists and ankles, consistent with placement of wrist and ankle restraints. Faint areas of subcutaneous hemorrhage were over the left scapular and right postero-inferior costal margin. No deep muscle hemorrhage of the torso or extremities or fractures of the long bones of the extremities were identified. No injuries that would suggest the use of a neck hold, Taser deployment or physical restraint, other than wrist and ankle cuffs, were identified. Examination of the brain showed edema and other secondary changes due to interruption in oxygen/blood flow, which were more prominent in the parietal and occipital lobes and the medulla of the brainstem. The spinal cord was intact, but showed extensive edema, traumatic contusion (bruising) and necrosis of the cervical spinal cord, extension of the necrosis into the lower brainstem and high thoracic regions, and secondary, non-traumatic changes due to probable re-perfusion injury of the entire spinal cord. The internal examination showed no evidence of injury to the ribs, thoracic or lumbar vertebral column, pelvic bones or the internal organs. An anterior neck dissection showed an intact hyoid bone and laryngeal cartilage.

Review of the chronology of the events from the when Mr. Gray was taken into custody in the context of a severe and unstable cervical spine fracture/dislocation that would be immediately symptomatic, is most consistent with Mr. Gray sustaining the injury in the police van sometime after the 2nd stop where ankle restraints were placed and before the 4th stop when the driver called assistance. At this 4th stop, Mr. Gray was displaying symptoms of a high spinal cord injury: difficulties in breathing and movement. The type of fracture/dislocation documented in imaging studies on admission is a high energy injury most often caused by abrupt deceleration of a rotated head on a hyperflexed neck, such as seen in shallow water diving incidents. While it cannot be excluded that this injury could occur while lying on the floor and sliding back and forth with the movement of the van, the likelihood of sufficient acceleration/deceleration to generate the energy needed is less likely in this position. Further, the most significant impact to the head and the impact consistent with the neck injury is on the left lower back area of the head, is not consistent with injury

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in this prone position. Although Mr. Gray was placed belly down on the floor of the van at the 2nd stop, he would have been able to get to his feet using the bench side and the opposite wall. As the clearance between the interior floor and roof was approximately 4 feet (Mr. Gray measured 5'9" in length), he would have been hunched over with his neck in a flexed position if he had risen off the floor. Mr. Gray was restrained with his wrists behind his back and at the ankles, was not belted with the safety belts that were present in the van, and due to an obstructed view of the roadway would have had trouble anticipating the van's motion; therefore, he was at risk for an unsupported fall during acceleration or deceleration of the van. An unexpected turning motion, acceleration or deceleration of the van would have precipitated him into the side walls, the door or the front of the van depending on his position, resulting in the left posterior impact to his head with injury to the spinal cord in his flexed neck. If the motion/acceleration/deceleration of the van was abrupt enough, given the confined space in the vehicle, it is possible that his neck injury occurred with him in a partially reclining position or as he was changing his position on the floor of the van. As the fracture/dislocation was considered very unstable, it is unclear whether the spinal cord lesion was complete, as documented in admission imaging studies, or in the spectrum of spinal concussion or contusion at the time of the fracture/dislocation in the van with evolution of the spinal cord injury during the movement of Mr. Gray to the bench, the subsequent stops and the motion of the van. Injury at this level of the spinal cord would have caused loss of function of the limbs and have direct effects on the mechanics of respiration through partial to near total paralysis of the diaphragm, the full function of which depends on the nerves associated with the part of the spinal cord that was damaged. Therefore, the time the injury most likely occurred was after the 2nd but before the 4th stop of the van, and possibly before the 3rd stop when a video showed the driver stopping, getting out, and looking in the back of the van. The reported kicking heard after the 4th stop would not have been possible; however, a seizure resulting from decreased oxygen supply to the brain may have caused the banging noise reportedly heard from Mr. Gray's compartment.

Based on the sequence of events and the described progressive alteration of mental and physical status, Mr. Gray's neck injury occurred while in custody, in and during transport in the police van. Safety equipment was available but not used. Therefore, it was not an unforeseen event (a medico-legal definition of an accident) that a vulnerable individual was injured during operation of the vehicle, and that without prompt medical attention, the injury would prove fatal. Due to the failure of following established safety procedures through acts of omission, the manner of death is best certified as **Homicide**. Prolonged hospitalization precluded relevant postmortem toxicological testing.

Carol H. Allan

Carol H. Allan, M.D.
Assistant Medical Examiner

David R. Fowler

David R. Fowler, M.D.
Chief Medical Examiner

Date signed: 4/30/2015

POST MORTEM EXAMINATION
OFFICE OF THE CHIEF MEDICAL EXAMINER
STATE OF MARYLAND

CASE NO. 15-03640

Autopsy X Inspection _____

JURISDICTION: Baltimore City DME/FI Bryant Smith
Jurisdiction of Death/Police Investigating

NAME OF DECEASED: Freddie Carlos Gray, Jr.

RESIDENCE OF DECEASED: 2431 Callow Avenue, Baltimore City, MD 21217

AGE: 25 Years SEX: Male RACE: African American

DATE OF INCIDENT: 4/12/2015 TIME: Unknown

ADDRESS OF INCIDENT: Unknown

PRONOUNCED DEAD: 04/19/15 TIME: 0559 hours

ADDRESS/INSTITUTION: University of Maryland Medical Center, Baltimore

DME/FI/OCME NOTIFIED: 04/19/15 TIME: 0818 hours

BY WHOM: Dr. Ginsberg

TRANSPORTED TO OCME: OCME vehicle

DATE OF AUTOPSY: 04/20/15 TIME: 0900 hours

PERFORMED BY: Carol H. Allan, MD, Assistant Medical Examiner

CAUSE OF DEATH: (a) Neck Injury **DO NOT DUPLICATE** Natural
(b) Accident
(c) Suicide
(d) X Homicide
 Could Not Be Determined

TO BE SENT
TO POLICE
ON YOUR APPROVAL

Other significant conditions:

HOW INJURY OCCURRED: Unbelted occupant of a police transport van

Freddie Carlos Gray, Jr.
Case #15-03640
April 30, 2015

NEUROPATHOLOGY REPORT
(Continued)

Spinal Cord: The entire spinal cord, measuring 35.0 cm in length, is available for examination. The dura shows a minimal amount of focal epidural hemorrhage on the posterior aspect of the cervical level. This hemorrhage measures 1.0 cm in diameter and it is thin-layered. After opening the dura anteriorly, the thoracic and lumbosacral cord appear normal. In the cervical region, however, there is extensive edema, softening, and subarachnoid hemorrhage. The subarachnoid hemorrhage measures approximately 2.5 cm in maximal diameter and it is located 2.5 cm caudal to the cervico-medullary junction. Below the subarachnoid hemorrhage, there is focal softening. Horizontal sections through the cervical cord show extensive hemorrhagic necrosis of the entire cervical cord. The hemorrhage involves both gray and white matter. At one point of the cervical enlargement, the hemorrhage involves predominantly the ventral and dorsal horns. At the low cervical and high thoracic level there is necrosis of the center of the cord. In the thoracic and high cervical region there are extensive petechial hemorrhages involving predominantly the peripheral white matter of the cord but are also present in more central regions. The lumbosacral cord also shows multiple fresh petechiae predominantly of the white matter. The roots are unremarkable.

- Summary:**
1. Hemorrhagic contusion and necrosis of the cervical cord.
 2. Petechial hemorrhages of the thoracic and lumbosacral cord, non-traumatic.
 3. Acute hypoxic-ischemic encephalopathy.
 4. Cerebral edema.
 5. Necrosis of the cervico-medullary junction.

30 April 2015

Date signed

Juan C. Troncoso

Juan C. Troncoso, M.D.
Neuropathologist

vbl

v cha

TOXICOLOGY
 REPORT OF FINDINGS

Case # **15-03640**
 Deceased Name
 If Previous Unknown
 Medical Examiner
 Autopsied by
 Jurisdiction

Lab # **15-1477**
Grey, Freddie

Carol H. Allan, MD
Carol H. Allan, MD
Baltimore City

Specimen Submitted	Test	Results		
Blood Heart	Volatiles	Ethanol	Negative	
Blood Hospital	Volatiles	Ethanol	Negative	
Bile	Drug Test (comprehensive)	Ketamine Positive		
Bile	Drug Test (comprehensive)	Midazolam Positive		
Bile	Drug Test (comprehensive)	Metoclopramide Positive		
Bile	Drug Test (comprehensive)	Acetaminophen Positive		
Bile	Drug Test (comprehensive)	Phenytoin Positive		
Bile	Drug Test (comprehensive)	Levetiracetam Positive		
Bile	Drug Test (comprehensive)	Other Drugs Negative		
Blood Heart	Drug Test (Individual)	Ketamine	6.7	mg/L
Blood Heart	Drug Test (Individual)	Midazolam	10	mg/L
Blood Heart	Drug Test (Individual)	Metoclopramide	0.3	mg/L
Blood Heart	Drug Test (Individual)	Levetiracetam	43	mg/L
Blood Heart	Drug Test (Individual)	Buspirone	0.1	mg/L
Blood Heart	Drug Test (Individual)	Phenytoin	12	mg/L
Blood Heart	Drug Test (Individual)	Acetaminophen	32	mg/L
Liver	Drug Test (Individual)	Ketamine	9.1	mg/Kg
Liver	Drug Test (Individual)	Midazolam	22	mg/Kg

15-03640

Toxicologist *B. L.*

Medical Examiner *Carol H. Allan*

NEUROPATHOLOGY REPORT

Name: Freddie Carlos Gray, Jr. **Case #:** 15-03640
Sex: Male **Age:** 25
Race: African American **Medical Examiner:** Dr. Allan
Date of Death: April 19, 2015

DO NOT DUPLICATE

MACROSCOPIC EXAMINATION of April 30, 2015

Brain Weight: 1550 grams (fixed)

Dura: Free of epidural or subdural hemorrhage. The superior sagittal sinus and the transverse sinuses are patent.

Brain: The cerebral hemispheres are symmetrical, the gyral pattern is normally developed but shows mild flattening throughout both convexities. The leptomeninges are translucent. Inspection of the interhemispheric fissure is unrevealing. At the base of the brain, blood vessels were dissected and show no malformation or atherosclerosis. The left vertebral artery is incomplete; there is only a 1.0 cm stump free of thrombus. The right vertebral is unremarkable. Cranial nerves are normal. The brainstem shows no abnormality of pons or medulla, but the cervico-medullary junction is necrotic. The cerebellar hemispheres are within normal limits.

On coronal sections, the cerebral hemispheres are symmetrical. Flattening of the gyri is noted throughout the convexity. The cortical gray matter is of normal thickness and well-demarcated from subjacent white matter. In the posterior regions, in the parietal and occipital lobes, there is dusk discoloration of the cerebral cortex, although its demarcation with white matter remains crisp. White matter is of normal volume and well-myelinated. The corpus callosum is of normal thickness and intact. The anterior commissure is normal. The ventricular system shows mild flattening of the lateral and third ventricles. There is no intraventricular hemorrhage. The third ventricle appears narrow but there is no elongation or central herniation. Caudate, putamen and pallidum are normal. The thalamus and hypothalamus are also within normal limits. The hippocampal formations are of normal volume and symmetrical. In the midbrain, the aqueduct of Sylvius is slit-like and the substantia nigra is normally pigmented for age. The cerebral peduncles are unremarkable. Pons shows normal basis and tegmentum. The locus ceruleus is well-pigmented. The medulla shows discoloration and possible necrosis of the region surrounding area postrema in the lower medulla. The cervico-medullary junction is necrotic. The cerebellum shows normal folia, white matter, and deep nuclei.