Dispelling Yet Another Myth Surrounding the JonBenet Ramsey Murder Investigation

by Misty

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It has been stated over and over that there was little bleeding involved in the head injury that JonBenet sustained. According to those who staunchly support the intruder theory, this would mean that the strangulation came first, or, at the very least, the ligature was secured tightly around JonBenet's neck before the head injury; thereby, limiting the flow of blood to the brain. Below are examples of some of the theories:

> "*The head blow came last, in my opinon. Decreased blow flow to the brain from the strangulation = little internal bleeding in the skull. The head blow came last, in my opinon. Decreased blow flow to the brain from the strangulation = little internal bleeding in the skull.*" – Smokey

> "*In all that I have read, including the book writeen BY the Ramsey's, the blow came last. Minimal hemorraging (sp??) in the brain shows that she was dead (or close to) prior to the blow. "* – Bernadetee

> "*Head injury: Smit calls head injury very severe, but little bleeding resulted — only about two tablespoons of blood. In fact, he said, the head injury wasn't noticed when she first was examined. There was no cut on the scalp. Only after removal of the skull cap was the fracture on the right side of her head apparent. Such an injury, he said, would usually result in massive bleeding, and blood should have been found in the house. "So when this happened, she was near death. I believe the garrote was in place and huge pressure had been put there. . . . That's why I believe the head blow came last, not first. . . . This was the coup de grace on the job.*" — Lou Smit

> "*Lou Smit and I both believe the minimal bleeding in the skull was due to the flow of blood to the brain being limited by the garotte.*" – Jameson, a.k.a., Susan Bennett

This is entirely a misconception — another myth in this case. Statements, such as the above, commonly circulate the message boards and media as fact and, quick frankly, are simply incorrect.

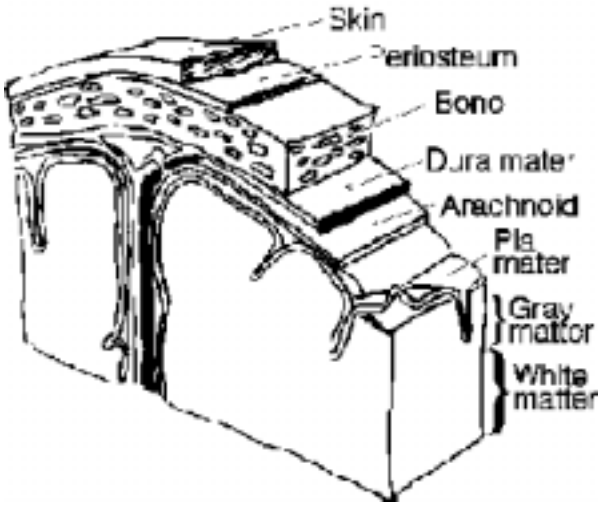

Figure 1. Meninges

This paper first walks the reader through a simple description of the basic structure of the brain and then parallels these facts with the Boulder Coroner's autopsy report of JonBenet Ramsey, which easily shows the reader the truth behind JonBenet's head injury.

Basic Structure of the Brain

To begin, the bony structure that covers the brain is called the cranium. Together the cranium and face bones are the skull. The meninges are the three layers (see Figure 1) of tissue that cover and protect the brain and spinal cord [1].

From the outermost layer inward they include:

1. dura mater (made up of two layers – an outer layer called the periosteum and an inner layer termed dura),
2. arachnoid, and
3. pia mater (closest to the brain).

The space between the arachnoid and pia mater is called the subarachnoid space. This is where the cerebrospinal fluid will flow, a clear watery substance that surrounds the brain and spinal cord.

The bulk of the brain is divided into two sections: the right and left cerebral hemispheres. The "gray matter" is the cerebral cortex. It has small grooves (sulci), larger ones (fissures) and bulges between the grooves called gyri.

The brain can be divided into pairs of lobes – frontal, temporal, parietal and occipital lobes [2]. These lobes can be further separated into areas that serve specific functions. The lobes of the brain do not work alone – complicated relationships exist between them (Figure 2).

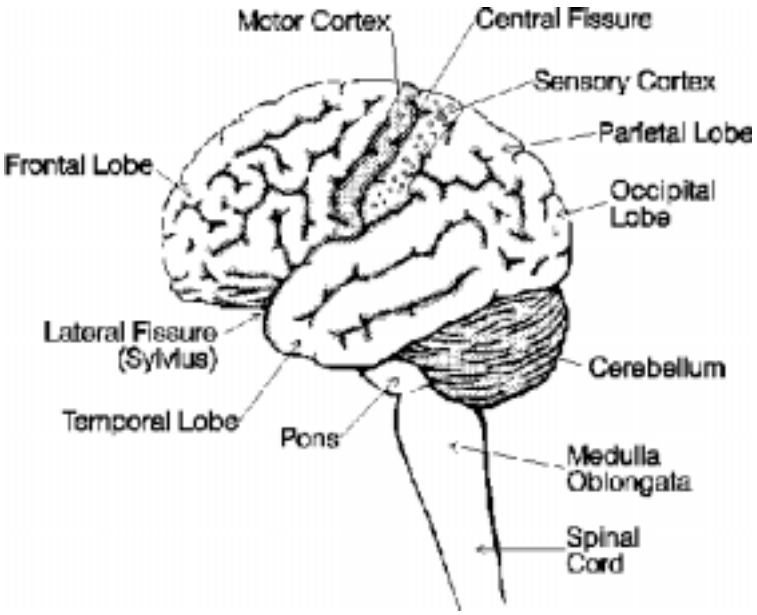

Figure 2. Structure of the Brain

JONBENET RAMSEY AUTOPSY REPORT REGARDING THE BRAIN

From the autopsy:

> "Skull and Brain: Upon reflection of the scalp there is found to be an extensive area of scalp hemorrhage along the right temporoparietal area extending from the orbital ridge, posteriorly all the way to the occipital area.
>
> This encompasses an area measuring approximately 7x4 inches. This grossly appears to be fresh hemorrhage with no evidence of organization. At the superior extension of the is area of hemorrhage is a linear to comminuted skull fracture which extends from the right occipital to posteroparietal area forward to the right frontal area across the parietal skull. In the posteroparietal area of this fracture is a roughly rectangular shaped displaced fragment of skull measuring one and three-quarters by one-half inch. The hemorrhage and the fracture extend posteriorly just past the midline of the occipital area of the skull. This fracture measures approximately 8.5 inches in length. On removal of the skull cap there is found to be a thin film of subdural hemorrhage measuring approximately 7-8 cc over the surface of the right cerebral hemisphere and extending to the base of the cerebral hemisphere. The 1450 gm grain has a normal overall architecture. Mild narrowing of the sulci and flattening of the gyri are seen. No inflammation is identified. There is a thin film of subarachnoid hemorrhage overlying the entire right cerebral hemisphere. On the right cerebral hemisphere underlying the previously mentioned linear skull fracture is an extensive linear area of purple contusion extending from the right frontal area, posteriorly along the lateral aspect of the parietal region and into the occipital area. This area of contusion measures 8 inches in length with a width of up to 1.75 inches. At
> the tip of the right temporal lobe is a one-quarter by one-quarter inch similar appearing purple contusion. Only very minimal contusion is present at the tip of the left temporal lobe. This area of contusion measures only one-half inch in maximum dimension. The cerebral vasculature contains no evidence of atherosclerosis. Multiple coronal sections of the cerebral hemispheres, brain stem and cerebellum disclose no additional abnormalities. The areas of previously described contusion are characterized by purple linear streak-like discolorations of the gray matter perpendicular to the surface of the cerebral cortex. These extend approximately 5mm into the cerebral cortex. Examination of the base of the brain discloses no additional fractures." [3]

Figure 3 shows the skull fracture with the displaced piece of skull.

Figure 3. JonBenet Ramsey Skull Fracture

WHAT THE AUTOPSY REPORT REALLY SAYS

Portions of the above autopsy are colored. The blue font indicates the skull fracture itself. Figure 3 shows the skull fracture with the displaced piece of skull. It is described as:

> "a linear to comminuted skull fracture which extends from the right occipital to posteroparietal area forward to the right frontal area across the parietal skull. In the posteroparietal area of this fracture is a roughly rectangular shaped displaced fragment of skull measuring one and three-quarters by one-half inch. The hemorrhage and the fracture extend posteriorly just past the midline of the occipital area of the skull. This fracture measures approximately 8.5 inches in length." [3]

Depressed skull fractures are most commonly seen when "a person falls on a sharp corner or on a flat surface with a raised object on it (rock on a tile floor or barrette on a child's head). This is also seen with blunt force trauma (hammer to the head) or missile trauma (gunshot wound). However, a depressed fracture may be found with an impact to a flat surface." [4]

JonBenet's head injury was a closed head injury. This mean that the trauma to her skull caused a break in the skull, but did not break the outer skin. The bleeding that she sustained from this injury remained inside. There were no external lacerations. The impact to her skull was forceful made by some type of small blunt object, which resulted in a depressed skull fracture, but the object did not penetrate the skin. Children's bones have a higher percentage of cartilage than adults; therefore, their bone structure is significantly more flexible than adults. The force of the blow would have to be greater in an adult than a child because the bone is denser (in an adult) than a child.

As illustrated in the photo above, JonBenet's fracture extended almost the entire length of the skull. The result of this impact was bruising (contusions) to the brain and damage to the internal tissue and blood vessels (hemorrhages). This is caused by coup-countercoup. From the impact, the brain jolts and can hit the skull on the opposite side of the impact causing a coup lesion.

This is evidenced in the following autopsy excerpts:

"On the right cerebral hemisphere underlying the previously mentioned linear skull fracture is an extensive linear area of purple contusion extending from the right frontal area, posteriorly along the lateral aspect of the parietal region and into the occipital area. This area of contusion measures 8 inches in length with a width of up to 1.75 inches."

"At the tip of the right temporal lobe is a one-quarter by one-quarter inch similar appearing purple contusion." [3]

When Meyers reflected (exposed) the skull cap, he found an "extensive area of scalp hemorrhage along the right temporoparietal area extending from the orbital ridge, posteriorly all the way to the occipital area" which "encompasses an area measuring approximately 7x4 inches." [3]

This is the first area of bleeding he found.

Next:he removed the skull cap: "On removal of the skull cap there is found to be a thin film of subdural hemorrhage measuring approximately 7-8 cc over the surface of the right cerebral hemisphere and extending to the base of the cerebral hemisphere." [3]

This is the second area of bleeding he found.

He then find another area of hemorrhage: "There is a thin film of subarachnoid hemorrhage overlying the entire right cerebral hemisphere." [3]

Bleeding between the arachnoid and the pia meter members.

This is the third area of bleeding he found.

This is pretty straightforward. There were three distinct areas of bleeding. The injury was a closed head wound; in other words, it did not penetrate the skin. Dr. Meyers found a quite sizeable amount of blood by removing the skull cap.

Next, Dr. Meyer finds a subdural hemorrhage, which is "a collection of blood on the surface of the brain. It lies beneath the outer covering (the dura) of the brain and the brain's surface." [3]

Further, "If this bleeding occurs quickly it is called an acute subdural hematoma. If it occurs slowly over several weeks, it is called a chronic subdural hematoma. The clot may cause increased pressure and may need to be removed." [5]

An acute subdural hemorrhage can develop in minutes or hours. The person will usually lose consciousness. As pressure from the injury increases, the cerebrospinal fluid within the skull exceeds the upper limits for normal pressure. This pressure will decrease blood flow to the brain.

An acute subdural hemorrhage is normally accompanied by contusions and cerebral artery tearing. This leads to the development of a subarachnoid hemorrhage and bloody cerebrospinal fluid. Again, this hemorrhage can lead to increased intracranial pressure.

What is increased intracranial pressure? "A condition in which the pressure of the cerebrospinal fluid or brain matter within the skull exceeds the upper limits for normal pressure." … "Increased intracranial pressure is almost always indicative of severe medical problems. The pressure itself can be responsible for further damage to the central nervous system by decreasing blood flow to the brain or by causing the brain to herniate (push through) the opening in the back of the skull where the spinal cord is attached. Sudden herniation through the foramen magnum (back of the skull) is fatal." [6]

"A swollen brain is heavy, with visible enlargement of the surface convolutions (gyri) at the expense of obliteration of the the intervening gaps (sulci) and compression of the fluid filled cavities (ventricles) deep within the brain." [7]

Again from the autopsy: "Mild narrowing of the sulci and flattening of the gyri are seen." [3] This clearly shows that JonBenet's brain was beginning to swell. The effects of the swelling caused a rise in pressure within her brain, therefore affecting the blood and oxygen flow to the brain.

To say conclusively that the head injury had to come came last due to the "lack of bleeding" in JonBenet's brain is misleading. First, there were three separate areas of bleeding (hemorrhages), contusions (bleeding) and swelling. The effects of those injuries could cause secondary trauma, including hypotension (low blood pressure) — blood pressure falls so that enough blood reaches the brain and hypoxia, which is a lack of oxygen.

WHAT EXPERTS SAY ABOUT THE HEAD INJURY

Dr. Cecil Wecht, a noted forensic expert noted in the book, "Who Killed Jonbenet Ramsey? that:

> *"…he was shocked as he read on and learned what Dr. Meyer discovered under the broken bone, inside the shattered skull. As a first court edited of the report at revealed vaguely in February, there was the predicable "subdural hemorrhage" – the collection of blood under the dura membrane between the skull and the brain, but the additional information included a detail that Wecht would not have predicted. The hemorrhage consisted of only 7 or 8 cm of blood."*
>
> *"The hemorrhage consisted of only 7 or 8 cm of blood – less than 2 tsps. (a brimming tsp. holds 4 or 5 ccs of blood)."* [8]

In a newspaper interview on July 15, 1997, Drs. Wecht and Kirschner had the following to say:

> *"It's possible there could have been more than one blow, because it's a very long fracture that goes from front to back, part of it is going up over the midline (of the skull), and there is a displaced fragment of her skull," said Dr. Cyril Wecht, coroner for Allegheny County, Pa. "The head wound was not designed to kill, it was designed to cover up. There is no large collection of blood in the brain, and if the heart had been beating, then you would have had much more bleeding into the cranial vault as a result of an injury."*
>
> *Dr. Robert Kirschner, a retired deputy chief medical examiner of Cook County, Ill., and a clinical associate in the Departments of Pathology and Pediatrics at the University of Chicago, disagreed.*
>
> *"You very often find head injuries with very little bleeding, even if some people just die of head injury without strangulation," Kirschner said.* [9]

Rocky Mountain News asked Dr. Ronald Wright, director of the forensic pathology department at the University of Miami to review the autopsy. According to that article:

> *"The blow to her head — which Wright is convinced was not from a golf club but more likely a blunt object such as a baseball bat or heavy flashlight — came first, Wright said.*
> *"She was whopped on the head a long time before she was strangled,'' said Wright. "That might or might not have rendered her unconscious. But this is not anything that kills her right away.''*
> *He said 20 to 60 minutes elapsed between the skull fracture and the strangulation.*
> *The reason he's so sure, said Wright, is that details revealed about the brain injury, "the swelling, the bleeding here and there, they take a while to happen.''*
> *And that wouldn't have happened, he said, if she was already dead.*
> *"I think, probably, the head injury came first, because the strangulation resulted in petechial (pinpoint) hemorrhages'' in areas such as the eyelids, Kirschner said.*
> *"I think she died when she was strangled. The cerebral hemorrhaging and bruising of the brain did occur first. But she was still alive when strangled."*[10]

In an interview conducted in 2001, Dr. Michael Doberson, a coroner suggests:

> *"there would have been much more internal bleeding inside the brain, if JonBenet had been struck first and strangled later."*
>
> *"I would disagree with the theory of the Boulder police that — any of the changes that are seen at autopsy that are associated with the ligature strangulation are staged in any way," says Dr. Doberson.* [11]

It is apparent that even the experts are divided on which injury – head injury or strangulation — came first. However, given the above explanation of the effects of JonBenet's head injury and the physical evidence surrounding her neck injuries (see "JonBenet Ramsey: The Truth Death of Innocence), it seems unlikely that this six-year-old child was strangled before the head injury was inflicted.

END NOTES:

1. http://www.neurosurgery.org/health/images/meningesbig.gif.

2. http://www.neurosurgery.org/health/images/lobesbig.gif.

3. Boulder County Coroner, Autopsy Report, JonBenet Ramsey.

4. http://www.sbstruth.com/Fractures.htm.

5. http://www.nlm.nih.gov/medlineplus/ency/article/000793.htm.

6. http://www.dundee.ac.uk/forensicmedicine/llb/heading.htm

7. http://www.waiting.com/abouttbiicp.html

8. 'Who Killed Jonbenet Ramsey?' by Cyril Wecht and Charles Bosworth Jr., page 254.

9. Krupski, Alli, "Autopsy report details JonBenet's brutal end: High court orders document unsealed, Daily Camera, July 15, 1997.

10. Brennan, Charlie, "Pathologist: No doubt of JonBenet sex assault: Girl was hit on head before she was strangled, expert says, Rocky Mountain News, July 16, 1997.

11. Interview, Today Show, May 2, 2001.