

of the Shaken Infant: From Henry II to John Caffey

by Stephen Lazoritz, MD

Recently, Shaken Infant Syndrome has become a "hot topic" among child abuse professionals. It seems that we are recognizing this type of child abuse more frequently, and the first ever "Shaken Baby" conference held last October drew nearly 800 participants. History has taught us, however, that "timely" topics are frequently "timeless" as well. The Shaken Infant Syndrome is an excellent example of how a current medical syndrome possesses deep historic roots which can be traced from the mid-1500's to the pages of today's medical journals.

In 1559, times were good for Henry II of France. He had just signed a peace treaty with Spain at Chateau Cambresis, and many events were planned for the celebration, including a jousting match which pitted the King against the Comte de Montgomery. During that jousting match, unfortunately, the king received a blow from a lance. Here we read the description of the injury suffered by the King: "The muscular skin of the forehead, over the bone, was torn across to the inner angle of the left eye, and there were many little fragments or splinters of the broken shaft lodged in the eye, but no fracture of the bone. Yet because of such commotion or shaking of the brain, he died on the eleventh day" (Packard, 1926, p. 58).

This description was written by King Henry's personal surgeon, Ambroise Pare, who described his autopsy findings: "After his death, they found on the side opposite to the blow, towards the middle of the commissure of the occipital bone, a quantity of blood effused between the dura and the pia mater." (Packard, 1926, p. 58, 61) This is the first recorded description of the subdural hematoma, which was clearly caused by impact trauma in this case.

While Pare's description clearly laid the foundation for the subdural hematoma to be considered a traumatic injury, the work of a famous pathologist 300 years later cast doubt on the traumatic etiology. In 1856, a German pathologist named Rudolf Carl Virchow described the subdural hematoma and maintained that its cause was infection. He referred to this disorder as "pachymeningitis interna," a term which remained in use for almost 100 years.

Four years later, a French physician named Ambroise Tardieu published a report detailing the abuse and maltreatment of children. In it he described 32 children, 24 of whom were abused by their parents, and 18 of whom died. His report included descriptions of injuries associated with physical abuse that we see today. Of particular interest was his

description of "thickening of blood on the surface on the brain" that he related to trauma in these children. Thus, we had the first description of a subdural hematoma caused by traumatic head injury to a child as a result of abusive treatment.

As time passed, contributions to the medical literature, which in retrospect are quite significant, went largely unnoticed. In 1891 the great German pathologist Dohle published a study of autopsies in children and found subdural hematoma to be a common finding. In 395 autopsies of children less than one year of age, 14% were found to have subdural hemorrhage. In children greater than one year of age, the incidence was 8%. In 1914, also in Germany, Kovitz expanded Dohle's work and performed perhaps the largest autopsy study of children to date. He examined nearly 6,000 children under two years of age and found subdural hemorrhage in 14% of infants one to three months old, 10% of infants three to twelve months old and 9% of children one to two years old. Clearly, subdural hemorrhage was not a rare occurrence in young infants and children. These studies, however, did not address causality.

One early suggestion that violent motion may injure infants can be found in the 1907 text by William Preyer, *Mental Development of the Child*. He described

several potentially harmful practices, including the too vigorous rocking of the cradle. He wrote, "the inexcusable violent rocking in the cradle which puts the baby into a dazed condition in order that he may not trouble those that have care of him is extremely injurious" (Preyer, 1907, p. 41). He did not describe what the injury might be.

A landmark in the investigation of subdural hematoma came in 1930, with David Sherwood's publication of a classic review of nine children with cases of subdural hematoma. Of those nine cases, many had retinal hemorrhages and five of the nine had what he called "dubious home conditions." He concluded that the fact that these infants came from "dubious" environments made the histories provided by the parents to be less valuable, and raised the question of possible head trauma. Sherwood proposed that the children who presented with subdural hematoma had been injured, even though no admission of any traumatic event was made in any of these cases.

In 1939, Ingraham and Heyl presented 11 cases of children with subdural hematoma, with one particularly interesting case of an eight-month old boy

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who presented with seizures. The child had multiple bruises on his extremities, bruises on his face, bilateral retinal hemorrhages, and fractures of both of his forearms — a classic case of child abuse. The authors made two major points in this study: (1) the harder one looks for subdural hematoma, the more cases will be identified and (2) the etiology of subdural hematoma was traumatic in most, if not all, of the cases.

Holt's well-known textbook of pediatrics, published in the 1930's and 1940's, stated that the etiology of this "hemorrhagic pachymeningitis" was unknown, and that "in patients under two years, the story of a proceeding head injury is either wanting or is a rule quite inconspicuous" (Holt, 1940, p.1054). The author made certain observations regarding this disorder, however, which were astute: (1) "The frequency with which the condition is encountered in foundlings, illegitimate children and those in institutions has often been commented on," (2) "Breast-fed infants are notoriously immune from this disorder" (Holt, '940, p.1054). These statements speak to the fact that the infant's home environment is related to this syndrome.

The greatest advances in the identification of the Shaken Infant came with the emergence of radiology as a medical specialty. Indeed, many monumental studies were done in the 1940's and 1950's. Foremost was the work done by the pediatric radiologist John Caffey in 1946 published in the article entitled "Multiple fractures in the long bones of infants suffering from chronic subdural hematoma" (Caffey, 1946). In this report, Caffey described cases of six children with subdural hematoma in which there were 23 fractures and no history of trauma. Fourteen of the fractures were metaphyseal and nine were diaphyseal. This article clearly stated the case that children with subdural hematomas had been traumatized, and a search for other evidence of trauma, specifically long bone fractures, should be made

In 1968, the neurosurgeon Omayá showed that subdural hemorrhage could be caused by rotational displacement alone, without impact. By producing whiplash injury in rhesus monkeys, he set the stage for John Caffey's 1972 landmark article "On the theory and practice of shaking infants." In this report, Caffey describes examples of 27 children with subdural hemorrhage who had received "whiplash shaking." There was no history of trauma in any of these children. Dr. Caffey wrote, "The whiplash shaking of infants and younger children are precarious, pervasive, prevalent, and pernicious practices which can be observed whenever parents, parent substitutes, infants, and small children congregate" (Caffey, 1972, p.165).

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Interestingly enough, of his 27 cases, 15 were found to be attributed to a nurse named Virginia Jaspers, who was employed to care for these infants and whose story was told in a 1956 *Newsweek* magazine article. "The brutal and tragic career of nurse Virginia Jaspers is tied to her massive physical traits. She is an ungainly six feet, weighs 220 pounds, and has a 52 inch waist. Police conclude that she probably had no idea of the strength in her cruelly big arms and hands." How did she injure these children? "That evening Abby Kaspinov, 11 days old, didn't want to take her formula. Exasperated, the nurse picked her up and gave her a good shaking. (It was all uncontrollable. . . I don't know why I did it.)" (*Newsweek*, 1956, p.90).

Today, John Caffey's "Whiplash Shaken Infant Syndrome" is called "The Shaken Infant Syndrome" or the "Shaken Baby Syndrome," and many investigators have added greatly to our knowledge of this disorder; a disorder with a heritage of over 400 years.

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