

On the theory and practice of shaking infants: its potential residual effects of permanent brain damage and mental retardation.

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John Caffey, MD

Am J Dis Child. 1972;124(2):161-169. doi:10.1001/archpedi.1972.02110140011001

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Abstract

In the first modern discussion in 1946 of the parent-infant stress syndrome (PITS), or battered baby syndrome, I described six infants, 13 months or younger, who suffered from the combination of subdural hematomas and characteristic bone lesions.¹ During the last 25 years²⁻⁵ substantial evidence, both manifest and circumstantial, has gradually accumulated which suggests that the whiplash-

shaking and jerking of abused infants are common causes of the skeletal as well as the cerebrovascular lesions; the latter is the most serious acute complication and by far the most common cause of early death.⁶

Today we invite your attention to the evidence which supports our concept that the whiplash-shaking and jerking of infants are frequently pathogenic and often result in grave permanent damage to infantile brains and eyes. We shall also point out that potentially pathogenic whip-lash-shaking is practiced commonly in a wide variety of ways, under a wide

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August 1972

Vol 124, No 2

AMERICAN
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Abraham Jacobi Award Address

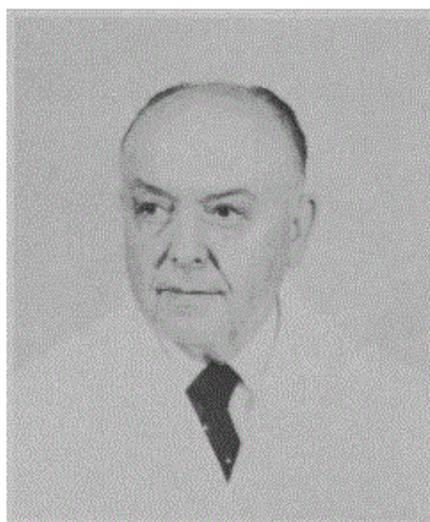
On the Theory and Practice of Shaking Infants

Its Potential Residual Effects
of Permanent Brain Damage and Mental Retardation

John Caffey, MD, Pittsburgh

In the first modern discussion in 1946 of the parent-infant stress syndrome (PITS), or battered baby syndrome, I described six infants, 13 months or younger, who suffered from the combination of subdural hematomas and characteristic bone lesions.¹ During the last 25 years²⁻⁴ substantial evidence, both manifest and circumstantial, has gradually accumulated which suggests that the whiplash-shaking and jerking of abused infants are common causes of the skeletal as well as the cerebrovascular lesions; the latter is the most serious acute complication and by far the most common cause of early death.⁶

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lash-shaking is practiced commonly in a wide variety of ways, under a wide variety of circumstances, by a wide variety of persons, for a wide variety

line of demarcation between pathogenic and nonpathogenic shaking is often vague.

The nature and distribution of the bone lesions in the PITS must be interpreted from the radiographic changes exclusively because they have not been studied systematically at either surgical exploration or necropsy. The metaphyseal avulsions are the most common of these lesions. Some are small fragments of cortical bone torn off the external edge of the cortical wall at the metaphyseal levels where the periosteum is most tightly bound down to the cortex. In most cases, however, they appear to be small chunks of calcified cartilage which have been broken off the edges of the provisional zones of calcification at or near the sites of the attachments of the articular capsules (Fig 1 to 3). Often bones on both the proximal and distal sides of a single joint are affected, especially at the knee.

out that potentially pathogenic whip-

Received for publication April 12, 1972; accepted May 9.

From the departments of radiology and pediatrics, School of Medicine, University of Pittsburgh, and the Children's Hospital of Pittsburgh, Pittsburgh.

Read as the Tenth Annual Abraham Jacobi Award Address before the 121st annual convention of the American Medical Association, San Francisco, June 20, 1972.

Reprint requests to Children's Hospital of Pittsburgh, 125 De Soto St, Pittsburgh 15212 (Dr. Caffey).

of reasons. The most common motive for repeated whiplash-shaking of infants and young children is to correct minor misbehavior. Such shakings are generally considered innocuous by both parents and physicians. If our concept of the pathogenic significance of whiplash-shaking is valid, it follows that the prevention of such shaking and jerking might substantially reduce the incidence of brain damage and mental retardation. The

All of these metaphyseal avulsion fragments appear to result from *indirect, traction, stretching, and shearing, acceleration-deceleration stresses on the periosteum and articular capsules, rather than direct, impact stresses such as smashing blows on the bone itself.*

Traumatic involucra (Fig 4 to 6) commonly accompany the metaphyseal avulsions and involve the same terminal segment of the same shaft.

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