CEPHALIC BRUITS IN CHILDREN

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The discovery of an intracranial murmur during the routine physical examination of an apparently healthy infant or young child may startle the examiner and alarm the parents. This is particularly true in recent years because cerebral auscultation has practically ceased to be a part of the clinical physical examination in adults and children, and therefore, the significance of these bruits may not be appreciated.

Although in the past much has been written on the subject of intracranial bruits in infants and young children, this interesting material actually has been collected in only a few places, and it seemed of value to record a review of the writings of earlier physicians concerning the significance of intracranial bruits in infants and young children.

Writing in the American Journal of Medical Sciences in 1838, Fisher stated that 5 years previously he had read a paper on the cephalic bellows sound and considered that this physical finding might play an important role in the diagnosis of cerebral diseases as well as thoracic diseases. He described cephalic sounds associated with the heart, with respiration, with the voice and with deglutition as they are developed in normal children at rest or asleep and prior to closure of the anterior cranial fontanelle.

The cephalic bellows sound (cranial bruit), Fisher observed, was related to “simple congestion of the cerebral organs,” chronic hydrocephalus, acute inflammation of the brain, suppuration (brain abscess) and induration of the brain accompanied by effusion into the ventricular system and at the base and also by immediate pressure on the brain.

In 1839 Smyth reported a case of chronic hydrocephalus relieved by tapping and stated that in a former paper, written in 1837, he had alluded to the cranial systolic murmur of chronic hydrocephalus.

The observations of Fisher were quickly picked up by physicians in Europe and many reports and ideas were contributed mainly by French and German physicians.

Versini, in 1839, translated Fisher’s observations into French, even to citing Fisher’s conjecture that the “bruit de souffle” had its origin in the arterial trunks at the base of the skull where the caliber of the intracranial arteries is compromised by the skull itself.

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In 1841 a treatise on auscultation was written by Barth and Roger¹ who although they accurately summarized Fisher’s work, even to his conclusion that the cephalic bruit did not exist in a normal state and was pathologic in import, commented that to that time no trained observer in France had been able to confirm his results.

Whitney⁴⁰ reported that he had encountered this cephalic systolic bruit in association with eight conditions. He listed an aneurysm of the basilar artery, and mentioned a statement by Tweedie³⁸ to the effect that probably many times use of a stethoscope in cases of aneurysm would reveal a bruit (bellows murmur) and would facilitate diagnosis. This might have been the beginning of the misconception, so aptly denied by Beadles² at a later date, that intracranial aneurysms frequently are accompanied by a bruit.

The early dispute over the significance of intracranial noises was not without its humorous side, for Kühllbrand¹⁷ in 1846, reported the case of a woman who was using her lower jaw and tongue to cause noises which were heard in the head and which had caused much concern among the local physicians and had deceived many of them.

One of the earliest definitive articles from Germany, perhaps the first and, according to some, the most complete, was contributed by Wirthgen⁴¹ in 1855. He suggested that there was an anatomic-physiologic reason for the intracranial bruit in some children and that the bruit was the shock of the carotid pulse transmitted along the great vessels of the skull. The skull bones increased the resonance and this was the cause of the intracranial bruit. Wirthgen stated that the reason a bruit may not be heard in very, very young children is that the bones are too loosely united to provide resonance.

Hennig,¹² writing a year later, was of the opinion that the source of the cephalic blowing sound was in the arterial system, but he did not think the sound was the result of vibration of the arterial walls themselves, or of the noise they communicate to the cephalic mass or to the walls enclosing the cephalic mass. He concluded that if the arterial system is the source of the noise, it must be the intracranial venous system that transmits it.

In 1859, in a rather extensive article, Rilliet²⁵ summed up much of the material on cranial murmurs and added some thoughts of his own. To that time, it was apparent that there was a complete divergence of opinion between American and German physicians on two points. Wirthgen⁴¹ and Hennig¹² were certain that the cephalic blowing sound (bruit de souffle) in infants could be observed in healthy children, whereas Fisher,⁸ the American, was equally certain that the noise did not exist intracranially in a healthy young individual. The German physicians Wirthgen and Hennig claimed that the cephalic bruit disappeared as the intracranial pressure increased. Fisher,⁸⁻⁹ on the other hand, believed exactly the opposite: that the cephalic blowing sound in children was caused by increased cerebral pressure.

Then Rilliet²⁵ added his opinion to the controversy and stated that increasing intracranial pressure caused the cephalic bruit to cease. He stated also that chronic pressure could cause the bruit to disappear and disagreed