

CRITICAL REVIEWS.

CLINICAL STUDIES IN TUBERCULOSIS.

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The Cerebro-Spinal Fluid in Tuberculous Meningitis.

A SYSTEMATIC effort has been made by Dr. Josephine Hemenway,¹ in the laboratory of the Babies' Hospital in New York, to determine the presence of tubercle bacilli in the cerebro-spinal fluid in cases of tuberculous meningitis. 138 cases had been admitted since March, 1906, and fluids for examination were obtained 137 times. In all but two the tubercle bacilli were demonstrated in the cerebro-spinal fluid. She has but little doubt that bacilli are more numerous late in the disease, yet she found in the first puncture 117 cases; in the second, 13; and in the third, 4. On an average, the first puncture was made about ten days before death.

As most hospital cases are not admitted until symptoms are tolerably well marked, it is somewhat difficult to say how early in the disease the bacilli might regularly be found. Griffith² has found, in looking over the records of the Children's Hospital of Philadelphia, that during the last ten years there had been admitted 239 cases of meningitis, of which number 121 were tuberculous. Although the diagnoses were necessarily primarily clinical, part of them had been confirmed by lumbar puncture, and in many cases by autopsy also. He thinks that tubercle bacilli can be discovered in the cerebro-spinal fluid in the great majority of cases, although long and minute search may be required. In addition to a bacterial investigation, he advises a careful cytoscopic study; but there are exceptions to the common belief that tuberculous meningitis produces an increased number of lymphocytes in the cerebro-spinal fluid. Morse³ lays great stress on the discovery of tubercle bacilli, as he has obtained a positive tuberculin test in cases of infantile paralysis, "in which also the characteristics of the cerebro-spinal fluid were exactly those of tuberculous meningitis, except that tubercle bacilli were not present." Holt⁴ feels "sure that the great frequency of tuberculous meningitis is not appreciated. With the introduction of lumbar puncture, the

¹ Hemenway: *Archives of Pediatrics*, January, 1911.

² Griffith: *Archives of Pediatrics*, January, 1911.

³ Morse: *Ibid.*

⁴ Holt: *Archives of Pediatrics*, January, 1911.

diagnosis of acute meningitis enters upon a new phase. This is quite as important an advance in this group of diseases as is the adoption of throat cultures in diphtheria and other throat affections." He found that tuberculous meningitis occurred in 70 per cent. of the cases of acute meningitis in the Babies' Hospital, apart from the epidemic of cerebro-spinal meningitis. During the past four years, 8 per cent. of the hospital deaths had been due to this cause. In general practice tuberculous meningitis was very often overlooked or a mistaken diagnosis made: of thirty successive cases admitted to the hospital, in only three was the diagnosis made, and in only three others was it suspected. He states that two common misconceptions regarding tuberculous meningitis are, that it is a disease of long duration, whereas it rarely lasts over five weeks; and, secondly, that it usually affects delicate infants. He does not mean by this that healthy children are more prone to the disease, but that a tuberculous infection in a young child is very apt to involve the brain early, before there is time for the symptoms which result from general tuberculosis to be manifest. He thinks that in tuberculous meningitis bacilli are always present in the cerebro-spinal fluid, and although difficult to find in the early stages, a careful examination should disclose them in the later stages. An interesting case, illustrating the importance of the detection of tubercle bacilli in the cerebro-spinal fluid, is reported by Higgs.¹ Tubercle bacilli in the fluid obtained by lumbar puncture confirmed the diagnosis of tuberculous meningitis, yet the fluid showed chiefly polymorphonuclear cells, with only a few lymphocytes. The case was also remarkable, in that at the autopsy no tubercles were found at the base of the brain or in the lungs, or in other organs, but tubercle bacilli were found in the cortex of the brain.

As to the age-incidence of tuberculous meningitis, Griffith² believes that most cases of tuberculous meningitis occur during the first two years of life, although but few occur before the age of six months. The disease is clinically meningitis only, the most frequent exceptions being, first, in older children suffering from tuberculous disease of the bone, in which meningitis finally develops and causes a fatal ending; and, second, in very early childhood, when, in general tuberculosis, meningitis is only one of the clinical manifestations.

¹ Higgs: *British Medical Journal*, May 15, 1909.

² Griffith: *Archives of Pediatrics*, January, 1911.