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## Notes of a Case of Epilepsy in which the Vertebral Artery was Tied.

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The following notes of the after-history, up to the present date, of a case in which the operation of ligature of the vertebral artery was performed for the arrest of epilepsy, may be of interest.\*

The patient was admitted to the Royal Albert Asylum on December 7th, 1882, from the Liverpool Workhouse, where, towards the end of 1881, his left vertebral artery was tied by Dr. William Alexander.

(The case is referred to in Dr. Alexander's book, "The Treatment of Epilepsy," p. 3, and is one of the 36 cases in which he performed the operation. In most of the cases he tied both vertebral arteries simultaneously.)

*History on Admission.*—C. M., male, age 11. A congenital imbecile. Mother living (in Liverpool Workhouse). Father died from an accident. Mental deficiency first observed in childhood. Attributed to fright of mother during pregnancy.

Has had scarlet fever, measles, and whooping cough. Nothing particular in his general aspect. No deformity. No sign of bone disease. No sign of paralysis or chorea. Complexion fair. Touch, smell, hearing, taste, hand, all normal.

Speech fairly good. Sight, right pupil larger than left. Slight drooping of left eyelid.

Teeth fairly regular and good.

Palate normal. Heart sounds normal. Respiration normal. Large triangular scar at lower end of left sterno-mastoid.

\* The case has been for nearly eight years under the observation of Dr. Shuttleworth, to whom I am indebted for some of the following particulars, and whose kind permission I have to make use of the particulars recorded in the Case Books.

*Dimensions of Head.*—1. Circumference,  $19\frac{1}{8}$  inches ; 2. Transverse (from ear to ear over vertex), 11 inches—transverse (from ear to ear, calliper measure), 5 inches ; 3. Longitudinal (from nasal notch to occipital tuberosity), 12 inches—longitudinal (from nasal notch, calliper measure),  $6\frac{7}{8}$  inches ; 4. Width of forehead (between external angular processes of frontal), 4 inches.

Last epileptic fit 30th August, 1881; used to have 20 to 30 per month, each lasting from two to five minutes. None since ligation of left vertebral artery. Bodily health and condition fairly good. Placed among infant boys on girls' side.

The Notes following are taken from the entries in the Case Book.

1883, January 31st.—A fairly intelligent lad, talks well and knows a few coins ; is fond of buttons, and keeps two or three in his pockets. Is quite happy, and has good health. He has not had any epileptic attack since admission. Clean in his habits.

July 17th.—In good health and quite happy ; he has not had any fits since admission. Considerable mental improvement.

1884, January 29th.—He was in the infirmary for 12 days in October suffering from stomatitis. He is now quite well and is going on satisfactorily. He has not had any fits.

1885, February 21st.—He has had very good health during the year and has had no fits. He has improved at school.

June 9th.—He seems to have had a slight epileptic attack to-day for the first time. During dinner his right arm suddenly became stiff, and his face pale for a few seconds.

October 12th.—He has had about eight slight epileptic attacks since the last note, most of them consisting of momentary loss of consciousness, with or without falling. This morning, however, at about 9.15, he had a severe attack, with well-marked convulsive movements, lasting for more than an hour, followed by vomiting. After the convulsions ceased he seemed dazed for some time, and kept turning round whilst standing in an upright position.

Is being treated with bromides and belladonna.

1886, March 6th.—Since the above note he has been having fits much more frequently. He had 49 altogether last year, since they recommenced in June ; most of them are slight, but some of them are well-marked convulsive attacks. Intelligence much the same ; no further improvement at school.

1887, June 1st.—Has had 106 fits since January, 1886. He is now transferred to senior boys. No improvement mentally.

1888, July.—Still continues to have a large number of epileptic fits. No improvement mentally or physically.

December.—Total number of fits during the year :—1st half, 74 ; 2nd half, 157 ; total, 231.

1889, December.—Total number of fits during the last year :—1st half, 116 ; 2nd half, 129 ; total, 245.

Is being treated chiefly with belladonna, but without marked effect on the fits.

1890, July 1st.—In good health. Eats and sleeps well. Does not talk much, but, when spoken to, he laughs and says he “wants marbles.” He knows a penny, and when given one says he will “buy lots of marbles.”

He walks well, and has full power in his limbs. There is a slight ptosis of left eyelid, and left pupil is markedly smaller than right. When his tongue is protruded there is a deflection of about  $\frac{1}{8}$ - $\frac{1}{4}$  inch to right side.

There is marked anæsthesia of surface of body—does not seem to feel the prick of a pin.

The fits now usually last about ten minutes, and the convulsions are general, but somewhat more severe on right side.

After the convulsions have ceased, that is, during the post-epileptic state, he often attempts to get up, and would wander about the room in an unconscious state, if not prevented. During the fits he does not bite his tongue, nor does he wet or dirty himself, but there is generally a seminal emission. More than half the fits occur in the day time. For nearly 12 hours after a fit he seems in an extremely stupid and dazed condition. His mental state is slowly but steadily deteriorating. His diet consists of milk and eggs and farinaceous food, with a very small quantity of mince meat.

*Remarks.*—Dr. Alexander, writing in 1889, says of the operation of ligature of the vertebrae:—“It was performed in the hope that a lessened supply of blood to the hinder brain and spinal cord would result in a diminution or cessation of the epileptic convulsions. On most theories of epilepsy the expectation was a very reasonable one, because it was hoped that the diminution would be more permanent to the parts supplied, after ligature of the vertebrae, than after ligature of other vessels, on account of the absence of anastomosing branches, and the restraints to dilatation of the unligatured vessels by the bony canals through which the cerebral vessels pass, as the experiments of Sir Astley Cooper on dogs tended to prove.

“For a time these expectations were realized, but soon relapses occurred ; and in May, 1884, an analysis of 36 cases of operation for epilepsy showed only eight cases which have had so few fits since operation that they may practically be considered cures. Eleven were for several months so much improved that they seemed to be cured ;

and although the fits have recurred in all these, yet the improvement is still distinctly manifest in many.

"In sixteen cases there did not seem to be any decided improvement, either of a temporary or permanent kind. Three died out of the thirty-six, one from hæmorrhage, one from embolism, and one from pleurisy. All the cases operated on were chronic, hopeless epileptics, many of whom had gradually become mentally affected. None of the latter were permanently benefited to any practical extent. Of the others, the best case was an idiot boy, now in the Royal Albert Asylum, Lancaster; and the next best a perfectly sensible, healthy lad. In two cases of traumatic epilepsy, one was cured and the other much benefited. It is impossible, therefore, to say, before operating, what cases would probably derive benefit from the operation, and what would not. On account of this uncertainty the writer (Dr. Alexander) has ceased to recommend or perform the operation for the last two years," preferring now the operation of removal of the superior cervical ganglia of the sympathetic.

The case of this boy seems to be one in which the imbecility and epilepsy were both congenital, and in which the latter can only be considered a complication, and not the cause, of the mental state; but in which, nevertheless, the action of the epilepsy on the intellectual deterioration is seen to be slow and gradual, but none the less certain.

We see the arrest of the epilepsy for nearly four years after the ligature of the artery, during which time there was marked mental improvement under training, but followed by loss of this improvement on the return of the fits, showing, as Dr. Shuttleworth remarks in his paper on "The Physical Features of Idiocy in Relation to Classification and Prognosis," that, "speaking generally, epileptic idiots are disappointing subjects for tuition. They make a fair amount of progress for a time, but if they have a severe recurrence of epilepsy lose what knowledge they have acquired."

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