

A NOTE ON THE CONDITION OF THE TENDO ACHILLIS JERK IN DIPHTHERIA.

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THE condition of the tendo Achillis jerk in diphtheria, though alluded to by a few authors (1), has not received the same attention that has been given to the reflex in the case of sciatica and tabes. The present paper is based on 100 cases of diphtheria in which the tendo Achillis jerk was investigated until the time that the patient was allowed to sit up. This period varied in length according to the severity of the case, the condition of the heart, and the presence or absence of any paralysis, from twenty to sixty-three days from the onset of the disease. The reflex was sought for in the recumbent position. In forty-seven cases the Achillis jerks were affected to a varying degree; they were completely lost in twenty cases, and rendered sluggish in twenty-seven. In the remaining fifty-three cases they remained active throughout the period of observation, which in no case was less than six weeks, and in several cases was prolonged to three months or more.

From this it will be seen that though the Achillis jerks are affected in a large proportion of the cases, this affection is not so frequent as in the case of the knee-jerks. Owing to the greater liability of the diphtheritic toxin to impair the latter, affection of the Achillis jerks was never found without a corresponding or relatively greater impairment of the knee-jerks.

In Hector Mackenzie's (2) cases, the knee-jerks were lost in 80 per cent., *i.e.*, fifty-one out of sixty-four cases. In my own cases they were affected in sixty-nine, lost in thirty-one, sluggish in thirty-eight.

The higher percentage of Mackenzie's figures is probably due to the fact that his cases included a larger number of severe attacks than my own series, and that their course was not modified by serum. Early use of antitoxin, as I have shown elsewhere (3), diminishes the risk of subsequent paralysis. The same probably applies to affection of the reflexes.

As will be seen from Table I., the frequency and degree to which the Achillis jerks were affected bore a direct relation to the character of the initial attack, thus exactly corresponding with the frequency of the most characteristic complications of diphtheria, namely, paralysis and albuminuria (Table II.).

TABLE I.

Classes I. to VI. represent various degrees of severity of the faucial attack.

	No. of Cases.	CONDITION OF ACHILLIS JERKS.		
		Lost.	Sluggish.	Not affected.
Class I.—Very severe	15	9	5*	1†
„ II.—Severe	22	7	5	10
„ III.—Moderately severe	9	2	5	2
„ IV.—Moderate	23	2	5	16
„ V.—Mild	28	0	6	22
„ VI.—Very mild	3	0	1	2

* One died on tenth day, and one on eleventh day. † Died on fourth day.

This table clearly shows that not only is affection of the Achillis jerks commoner in the severe than in the milder forms of the disease, but that in the first two classes in which Achillis jerks were affected at all, the majority were completely lost; the minority were rendered sluggish only. In classes III. and IV. exactly the reverse holds good. In the last two classes the Achillis jerks were not lost in a single instance.

TABLE II.

Showing incidence of paralysis and albuminuria in 100 cases where the Achillis jerks were investigated.

	Paralysis cases.	Severe forms only.	Albuminuric cases.	Persistent albuminuria, <i>i.e.</i> , for three weeks or more.
Class I.	13 = 86·6 %	11 = 73·3 %	14 = 93·3 %	6 = 27·2 %
„ II.	9 = 40·9 %	3 = 13·6 %	11 = 50·0 %	0 = 0
„ III.	2 = 22·2 %	0 = 0	4 = 44·4 %	1 = 11·1 %
„ IV.	4 = 14·2 %	1 = 4·3 %	8 = 34·7 %	1 = 6·6 %
„ V.	1 = 3·5 %	0 = 0	4 = 14·2 %	0
„ VI.	0	0	0 = 0	0

Further analysis of the cases will show the relation of the affection of the reflexes to paralysis. Thus, out of twenty cases in which the Achillis jerks were lost, in fourteen (70 per cent.) paralysis occurred, and in twelve was severe.

Among twenty-seven instances in which the Achillis jerks were sluggish, there were seventeen cases (62·9 per cent.) of paralysis, of which eight were severe. In those cases where the knee-jerks alone were affected, the incidence of paralysis was much less. Thus, in thirty-one where the knee-jerks were lost, there were seventeen cases of paralysis (54·8 per cent., of which thirteen were severe. Of thirty-eight cases in which the knee-jerks were sluggish without being lost, there were twelve paralysis cases (31·5 per cent.), of which eight were severe.

In all the cases where definite paraplegia was present knee-jerks and Achillis jerks were lost; but in some, where from the severity of the initial attack loss of motor power might have been expected, the patient was able to walk alone from the first, with but slight ataxia and Rombergism, although the knee and Achillis jerks were completely lost.

This abortive condition, to which Aubertin and Babonneix have given the name of "*paraplégie diphtérique fruste*," is characteristic of the great majority of diphtheritic palsies, as I have illustrated elsewhere (3).

In thirty-two cases of loss of motor power, varying in degree from complete paraplegia to an ataxic gait combined with Rombergism, the Achillis jerks were affected twenty-four times. In thirteen of these they were completely lost; in eleven they were sluggish. The date at which the Achillis jerks were affected varied in different patients.

In the great majority of my patients, viz., thirty-two out of forty-seven, the Achillis jerks were already affected to a certain degree on admission to hospital. In eight of the thirty-two they were completely lost; in twenty-four they were sluggish; 50 per cent. of the knee-jerks were already affected on admission, fifteen being lost, thirty-five being sluggish.

All but four patients, two of which had already reached the eighth, one the fourteenth, and one the thirty-fifth day of

disease respectively, were in the first week of their illness, the average time during which they had been ill being 3.92 days. It is interesting to compare with these figures the results of H. Mackenzie, who states that early disappearance of knee-jerks is extremely rare, except in fatal cases. Macdonnell (4), on the other hand, who pointed out that knee-jerks may be lost on the first day of the disease, did not attach any prognostic importance to their absence. As only four of my hundred cases proved fatal, the difference in my results is to be accounted for by the fact that Mackenzie wrote in pre-antitoxin times.

In the great majority of cases the reflexes which were lost did not return, nor did those which became sluggish under observation resume their normal activity during the time they were in hospital.

As a general rule, the severer the case the earlier the Achillis jerks were lost. In most cases, unlike what happens in tabes, they were affected after the knee-jerks. Undue briskness of the Achillis jerks, with or without a similar condition of the knee-jerks, was found in a few cases during the early stages of the disease. Inequality of the reflexes on the two sides was also observed in some cases. This was especially noted where the reflexes which had been lost returned while the case was still under observation. The Achillis jerk, for instance, might return and resume its normal activity on one side for some time before any response could be obtained on the other. In every case loss or impairment of the Achillis jerks outlasted any paralysis that might have been present. A similar condition was observed in the case of the knee-jerks by Berhardt (5), and also by Mackenzie many years ago, and more recently by Aubertin and Babonneix.

SUMMARY.

(1) The tendo Achillis jerks are affected in a considerable proportion of all cases of diphtheria, though less frequently than the knee-jerks.

(2) The frequency and extent to which they are affected

bear, like albuminuria and paralysis, a direct relation to the character of the initial faucial attack.

(3) They are completely abolished in all cases of diphtheritic paraplegia.

(4) Their absence may be the only evidence of loss of motor power in the lower limbs.

(5) Like the knee-jerks, they are liable to be affected at an early stage of the disease, and to remain absent after disappearance of all diphtheritic paralysis, properly so-called.

(6) Like the knee-jerks, again, they may be unequally affected on the two sides, and, like the former, they may be unusually brisk before they become sluggish and finally disappear.

(7) The Achillis jerk, like the knee-jerk, after it has been lost, may reappear on one side before it does so on the other.

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- (4) MACDONNELL. "On the Early Loss of the Knee-jerk in Diphtheria," *Medical News*, October 15, 1887.
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