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Case report : Incidental finding of myotonic dystrophy with EMG to diagnosis AIN syndrome

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Introduction

Anterior interosseous syndrome is a medical condition that anterior interosseous nerve (AIN), a motor branch of the median nerve is damaged by trauma or entrapment. It is pure motor syndrome resulting in weakness of the pincer movement of the thumb and index finger. Electrophysiologic testing is an essential part of the evaluation of Anterior interosseous nerve syndromes. Typical nerve conduction studies (NCS) are normal, and electromyography (EMG) might demonstrate denervation in the flexor pollicis longus, flexor digitorum profundus I and II and pronator quadratus muscles. Myotonic dystrophy is the most common adult-onset muscular dystrophy, and autosomal dominant disorder. Symptoms include gradually worsening muscle loss and weakness. Muscles often contract and are unable to relax. Other symptoms may include cataracts, intellectual disability and heart conduction problems. EMG is also used to diagnosis myotonic dystrophy. In this case, patient who was suspicious about anterior interosseous syndrome had NCS & EMG and diagnosed myotonic dystrophy incidentally.

Case presentation

53 years old male patient complaining limited range of motion of right finger flexion since october, 2018 was referred for EMG to rule out anterior interosseous syndrome in physical medicine and rehabilitation department. No past history of diabetes, hypertension, tuberculosis, hepatitis was found. Physical exam showed positive reaction of "O.K sign" on his right hand and Hatchet face sign and mild weakness of left upper & lower extremities. Result of Needle EMG appeared myotonic discharge on all examed muscles and showed early recruitment sign except Rt. Flexor pollicis longus muscle because of uncheckable motor unit action potential(MUAP), and Rt. Pronator quadratus muscle due to normal MUAP with partial to full interference pattern. Result of nerve conduction study showed no abnormality of all examed motor and sensory nerve function. Compiling exams mentioned above could possible conclude Rt. anterior interosseous syndrome, but hard to confirm the diagnosis since myotonic discharge made it hard to distinguish abnormal spontaneous activity. Therefore, gene study is seemed to be required to confirm myotonic dystrophy. Thereafter, the patient visit Neurology department and tested Triplet Repeat Disorder (Myotonic dystrophy1 DMPK) and the result showed that DMPK gene's full

mutation was observed for the gene's CTG iterative sequence increased more than 150 times.

Conclusion

This patient had problem of finger flexion and got EMG examination to diagnosis anterior interosseous syndrome, but incidental finding of myotonic dystropy opinion induced gene study to confirm. Early symptoms of myotonic dystrophy are myotonia, muscle weakness but is easy to be missed unless patient expresses typical symptoms above. Ultimately, clinical doctor is highly required to suspect all possible diagnosis and differential diagnosis through exact physical examination.

Needle EMG

Muscle	Insertion	Fib	PSW	MUAP			Interference
				amplitude	duration	phase	
Paraspinal Muscles							
Rt. C5-6	MD*						
Rt. C6-7	MD*	-	-				
Rt. C7-T1	MD*	-	-				
Rt. Biceps	MD*	-	-	Normal	Normal	Normal	F/E*
Rt. Deltoid	MD*	-	-	Normal	Normal	Normal	F/E*
Rt. Pronator teres	MD*	-	-	Normal	Normal	Normal	F/E*
Rt. Pronator quadratus	MD*	-	-	Normal	Normal	Normal	P-F
Rt. Extensor digitorum communis	MD*	-	-	Normal	Normal	Normal	F/E*
Rt. Flexor pollicis longus	MD*	-	-	Poor volition	Poor volition	Poor volition	N
Rt. Abductor pollicis brevis	MD*	-	-	Normal	Normal	Normal	F/E*
Rt. 1st dorsal interosseous	MD*	-	-	Normal	Normal	Normal	F/E*
Muscle	**Insertion**	**Fib**	**PSW**	**MUAP**			**Interference**
				amplitude	duration	phase	
Paraspinal Muscles							
Lt. C5-6	MD*						
Lt. C6-7	MD*	-	-				
Lt. C7-T1	MD*	-	-				
Lt. Biceps	MD*	-	-	Normal	Normal	Normal	F/E*
Lt. Deltoid	MD*	-	-	Normal	Normal	Normal	F/E*
Lt. Pronator teres	MD*	-	-	Normal	Normal	Normal	F/E*
Lt. Extensor digitorum communis	MD*	-	-	Normal	Normal	Normal	F/E*
Lt. Abductor pollicis brevis	MD*	-	-	Normal	Normal	Normal	F/E*
Lt. 1st dorsal interosseous	MD*	-	-	Normal	Normal	Normal	F/E*

MD* : Myotonic discharge E* : Early recruitment

Interference pattern - N : None, S : Single, S-P : Single to partial, P-F : Partial to full, F : full

Fig 1. Result of needle electromyography

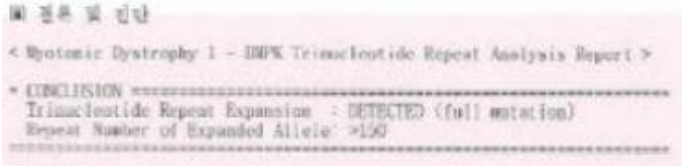

Fig 2. Result of DMPK gene study