

Thoracic Outlet Syndrome: A Case Report at the Physical Medicine and Rehabilitation Department of CHU Fann

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Received date: January 16, 2019; Accepted date: January 21, 2019; Published date: January 28, 2019

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Abstract

The thoracic outlet syndrome is a pathology related to the compression of the vasculo-nervous elements during their passage through the thoraco-brachial crossing. It is a rare condition in our practice because of difficult diagnosis. Its manifestation can be vascular, vegetative or neurological. The neurological manifestation is the most encountered. It can be made of isolated sensory disorder, motor or the 2 associated.

We report the case of a 25-year-old patient followed in the department of Physical Medicine and Functional Rehabilitation for a thoracic outlet syndrome with a favorable evolution after 4 months follow-up of functional rehabilitation.

Keywords: Thoracic outlet syndrome; Mega apophysis; Rehabilitation

Observation

We report the observation of a 25-year-old women, student, married, right-handed laterality, received at the Physical Medicine and Functional Rehabilitation Department, CHU Fann, Dakar, for the management of functional impotence of the right hand. It signals a notion of heavy load carrying (on the right side, carrying a school bag on the shoulder, water seal by the right hand). She presented with cramps, tingling at the extremity of the right upper limb, in particular in the last two fingers, then approximately two weeks after the first symptomatology and in a progressive way, a distal functional impotence (notably difficulty with the tasks requiring the use of the right hand; difficulty to turn a key in the lock, to hold the kitchen knife). After several consultations where she received medical treatment (gama-amino-butyric acid and magnesium) and some physiotherapy sessions showed a partial improvement. Clinical examination showed right distal paresis with muscle strength at 3/5, predominating on the interosseous and the abductor digiti minimi. We also note an amyotrophy of the thenar and hypothenar lodges, but predominant in the hypothenarine eminence. Hypoesthesia of the dorsal surface of the last two fingers and of the outer side of the forearm was found. Osteo-tendinous reflexes were normal. Wright's maneuver was negative. Electroneuromyography showed right C8-T1 radicular suffering. The standard X-ray of the cervical spine front view found a transverse mega apophysis of the seven cervical vertebrae pair. Cervical medullary imaging was normal. An ultrasound of the axillary fossa with dynamic maneuvers was requested, but not done. It has been replaced by a CT scan that has not been performed yet. She received several rehabilitation sessions for 2 to 3 sessions per week with stretching subclavicular, pectoralis muscles, strengthening trapezes muscles, sternocleidomastoid and rhomboïd. A consultation in orthopedic surgery was requested. The evolution after 4 months of rehabilitation was favorable with an improvement of the muscular

Introduction

The thoraco-cervico-brachial crossing is the set of anatomical spaces (bone, muscle, fascia and tendon) crossed by the vasculo-nervous elements intended for the upper limbs. It has a variable morphology according to the subjects. It offers a zone of conflict to these different structures.

The thoracic outlet syndrome includes clinical manifestations related to the intermittent or partial compression of the trunks of the brachial plexus, subclavian artery or vein at various points of the crossing, including the cervical ribs [1]; frequency is about 0.3%-0.7% in the general population [2]; diagnosis is difficult because it does not have a specific clinic. Different clinical expressions have been described, including neurological forms. Functional tests and maneuvers are used to support the diagnosis of thoracic outlet syndrome: Wright's maneuver, Sanders, Falconers and Weddle maneuver, Allen test, Adson test. But they have low sensitivity and specificity [3]. For the neurological forms, an amyotrophy of the intrinsic muscles of the hand, a diminution of the muscular force, sensory disturbances are sufficient to advance this diagnosis

The contribution of imaging including standard radiography but especially the 3D scanner or MRI can show the site of compression on the path of the cervico-thoraco-brachial space. The electroneuromyogram can be contributory to the diagnosis by showing the nerves that present the suffering. But this last exploration may be normal in a large majority of cases. Thus, a bundle of clinical arguments is sufficient to retain the diagnosis.

strength (5/5), functional capacities of the right hand with an accomplishment of the domestic tasks without difficulties.

Discussion

The term thoracic outlet syndrome was retained in 1956 to group together all the neurovascular manifestations of the scapular belt and offer adequate management. It is the narrow spaces through which the brachial plexus and subclavian-axillary vessels run from the cervical spine up to the inferior border of the pectoralis major muscle. We distinguish the suspensory apparatus of the pleura, inter-scalenic space (in the scalenic fossa consisting of muscle belonging to the lateral struts of the rachis with role in the static), pre-scalenic space, the costo-clavicular canal, the sub-scler tunnel. Pectoral and the humeral block which constitute zones of compression linked to the mobility of their constituents (osteo-muscular) [4]. In Africa few studies have been done and causes are widely dominated by supernumerary ribs [5]. Mega apophysis in thoracic outlet syndrome is rare. The preferred age is between 30 and 50 years [1] and affects more the female sex [6]. This age range corresponds to the active subjects requesting the regular use of their scapulo-humeral articulation, particularly persons exercising certain trades (workers, practicing certain types of sport). In our 25-year-old patient, the contributing factors were wearing the backpack on the right side and heavy load carrying by the right hand, which could lead to pulling the upper limb downwards.

The clinical manifestation can be vascular (arterial or venous). The arterial manifestation is characterized by vasomotor signs and ischemia. With regard to the venous manifestation, it is expressed by an edema, a cyanosis of the extremities. The literature also shows neurovegetative (vasomotor) and cardiac manifestations. These manifestations are related to the compression of the sympathetic fibers of the brachial plexus [7,8]. Neurological manifestations represent the majority of clinical manifestations (97%). They may be inchoate (subjective disorders of sensitivity: paresthesia, numbness) [9], as they may be a deficit characterized by a decrease in distal muscle strength and amyotrophy of the intrinsic muscles of the hand [10]. The various tests of Wright, Adson, and Allen consisting essentially of seeking an abolition of the radial pulse have a low sensitivity and low specificity in the diagnosis of the thoracic outlet syndrome, especially in its neurological form [11]. In our patient, the clinical expression was made exclusively by neurological signs (motor and sensory). The electroneuromyogram in thoracic outlet syndrome shows abnormalities only in a negligible percentage [12]. When performed, it can demonstrate signs of chronic partial denervation in the intrinsic muscles of the hand, a reduction in amplitude of sensory potentials. But these electrophysiological signs may appear late after the clinical manifestation [13]. That pattern is found in our patient. The causes are diverse and varied in the literature. Congenital causes are related to costo-vertebral bone malformations, malformations in the thoraco-brachial crossing. They are often associated with other functional and traumatic causes that are the contributing factors to the onset of symptomatology [9]. Our patient presented a mega apophysis in seven cervical vertebrae. This rare congenital anomaly would explain the conflict in the thoraco-brachial crossing.

The management of thoracic outlet syndrome depends on the clinical expression of the disease. Various methods have been used for this treatment, including surgery and functional rehabilitation. Surgical management consisting in excision or decompression of the compressed tract by the vascular-nervous elements has shown satisfactory results [14]. It is indicated in patients with a significant

deficit and sports patients with compression of the vasculo-nervous bundle demonstrated. Recently, injection of botulinum toxins in pectoralis et scalene muscles is related to provide excellent symptomatic relief [15]. In neurological forms, treatment is essentially based on functional rehabilitation. Various techniques of rehabilitation were used (in particular the strengthening of the so-called openers muscles and the stretching of those so-called fermeters of this space). They have improved the symptomatology in 50% to 80% of cases [16]. In our patient, there was an improvement in motor and functional after 4 months of rehabilitation (Figure 1).

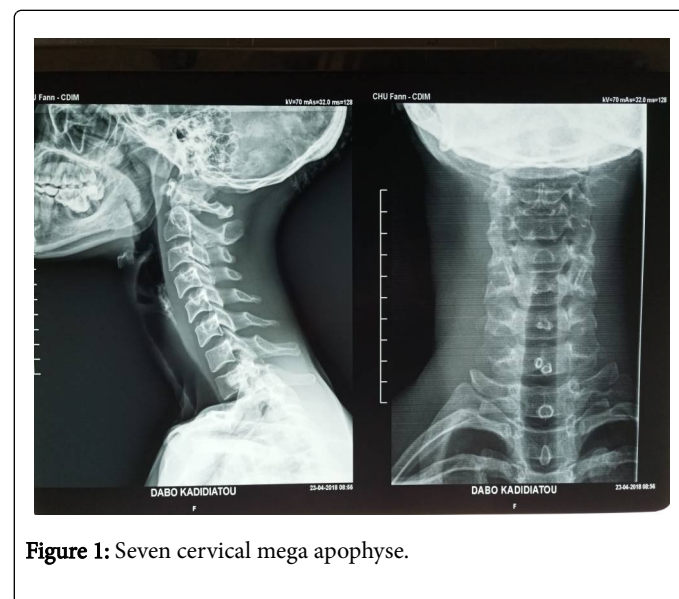


Figure 1: Seven cervical mega apophyse.

Conclusion

The thoracic outlet syndrome secondary for maga apophysis is a rare pathology, of diverse clinical expression and thus under diagnosed in our current practice. Clinical exploration in our working conditions is limited by financial means and lack of expertise in this direction. Rehabilitation alone allows an improvement of the motor function of the limb.

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