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A Clinical Case: Hypothenar Hammer Syndrome in a Kazakh Male

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Abstract

Hypothenar hammer syndrome (HHS) is a post-traumatic change of ulnar artery in the hypothenar region. HHS is a rarely occurring disease and little known among doctors which makes its diagnosis difficult.

The authors of this article presented here a clinical case of HHS among the Kazakh population.

This clinical case of HHS is the first known in Kazakhstan, so we present it due to its exclusivity. The optimal treatment of a such complication of hypothenar hammer syndrome like an aneurism of ulnar artery is surgical. The surgical removement of aneurism usually does not cause relapse or serious complications.

Key words: hypothenar hammer syndrome, ulnar artery aneurism, ulnar artery aneurism removal, microsurgery, hand surgery.

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Introduction

The first Hypothenar hammer syndrome (HHS) was described in 1934 by Von Rosen, the syndrome was found in factory workers [1]. The syndrome often occurs in people whose professional activity is associated with constant hypothenar mobility, e.g.: workers in the industrial sector, construction and sportsmen [1-3]. The term hypothenar hammer syndrome was offered by Conn in 1970, who suggested that repeated blunt force trauma to the hypothenar and ulna artery was the cause of this condition [1,3,4]. The main percentage of patients with this pathology are people whose professions as: mechanics, miners, butchers, carpenters, bakers, brick stackers, sawmill workers, machine operators, policemen [1,4-6]. In addition, HHS can subject volleyball, karate, hockey, tennis players, cyclists, powerlifters, badminton people at risk [1,7]. Regular use of a cane, history of hook bone fracture, smoking, male gender are also considered risk factors 8. After exiting the Guiyon Canal, the ulnar artery gives off a superficial branch that passes through the muscles of the hypothenar proximal to the hook of hamate and pisiform

Case report

Patient aged 58, worked for many years piercing paper with a wooden tool. Patient complained about the pain and the subcutaneous formation in the hypothenar region. The formation has been occurred 3 years ago, and it was increased gradually. The patient had previously been examined by oncologists, traumatologists and orthopedists, but no one diagnosed the disease. On physical examination, a pulsating mass up to 2*2.5 cm in size was detected in the hypothenar region. Allen's test showed no peculiarities. There were no signs of finger ischemia. Before the surgery, ultrasound examination was performed. According to the ultrasound data, a pulsating mass measuring 24*26 mm

bone, then pierce the palmar plate [4]. Repeated blunt trauma to the hypothenar region may cause local thrombus or aneurysm formation due to brief but intense mechanical compression of the ulnar artery towards the pisiform and hamate bones [4,8]. The clinical symptoms of HHS are very variable: intolerance of cold, cyanosis, hyperalgesia, pain, a mass in the hypothenar region, fingers necrosis [1,9]. The diagnostics includes a clinical examination, Allen test, doppler ultrasound, arteriography, MRI [10,11]. The differential diagnosis of HHS is between Raynaud's disease, systemic lupus erythematosus, scleroderma, giant cell arteritis, Buerger's disease, thrombangiitis obliterans, rheumatoid arthritis, and vasculitis [4,12]. The hypothenar hammer syndrome is a quite rare disorder, it's incidence estimates <1% [3,12]. Due to the rarity of the disease, the epidemiology of CHS is not well understood; a prevailing data about this disease is presented in the form of case reports or case series. There are no any information about HHS in kazakh population before, so this case is the first evidence of it.

under the hypothenar muscles was detected. The surgery was performed by the Z-shaped incision in the hypothenar region. The formation was separated, and the intraoperative diagnosis was primary aneurysm of ulnar artery (Figure 1). Aneurysm removal, end-to-end arterial anastomosis was performed. According to the histological processing, areas of hypertrophy and degeneration of the wall of the excision of the ulnar artery, proliferation of the intimate membranes, thrombus have been identified. In the post-operative period, the patient has no complaints and a year after that (Figure 2).



Figure 1 – ulnar artery aneurism



Figure 2 – the patient's hand 1 year after surgery

Discussion

The ulnar artery runs along the palmar surface of the hand anterior to the flexor retinaculum between the pea-shaped bone and the hamulus of hamate bone, the so-called Guyon's canal. In Guyon's canal, the artery is fixed by fibrous bridging along with neighbouring anatomical elements.

Distal to Guyon's canal up to the beginning of the superficial palmar arch, the artery is covered by the superficial aponeurosis, short palmar muscle. In this segment, the artery is most unprotected from external injuries. With constant repetitive blows or compressive movements of the hypothenar, the artery is caught between the hypothenar and the hook bone like a hammer and anvil [5]. Artery trauma causes vasospasm and possible crush injury. According to histological data, during intermittent trauma, intimal hyperplasia, fragmentation of the internal elastic lamina, thrombosis with occlusion of the lumen are formed. Further, there can be a possibility of ulna artery aneurysm [4,5].

Clinically, there may be extremity coldness, fingers ischemia, severe pain syndrome, paresthesia, blue disease, and pulsating formations [8,12]. The clinical picture is like Raynaud's disease, but in HHS there is no hyperemic phase. In this case, changes in skin color and temperature are more

Conclusion

In this case of HHS, the patient took a lot of time to consult with doctors of different profiles before he was diagnosed and treated. It happened due to HHS is a pretty rarely disease, there were no any evidence of HHS in Kazakh population before. Many doctors in Kazakhstan don't know this syndrome and disassociate its clinical aspects with musculoskeletal system diseases. A surgical treatment of HHS in our patient did not cause any complications or relapse during after-operation period, which does not contradict the findings of other published clinical cases of HHS.

Conflicting interests: The authors declare no

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visible compared to Raynaud's disease [2,5].

The clinical picture of this syndrome is not always clean; the disease can flow without any symptoms. Due to this fact, this syndrome is often misdiagnosed as a disease of the musculoskeletal system, so it means that this pathology is not sufficiently diagnosed [12]. Physical examination, Allen test, Ultrasonic Doppler examination are used as a diagnostic, as well as arteriography of the ulnar artery, which is standard procedure for this syndrome [1].

Therapy consists of reducing physical activity, elimination of provocative factors, smoking cessation, the use of anticoagulants, thrombolytics and vasodilators. Surgical treatment is used in case of aneurysm formation, failure of conservative therapy, development of finger necrosis [6]. Surgical techniques include proximal vasoligation, resection of the affected segment, further reconstruction of the artery with a vein graft or end-to-end anastomosis [2-4,8,12]. Patients with HHS mostly have a history of regularly suffering small traumatic events [3,4,9,13-16], less often a single injury [17]. Relapses in this syndrome are not described in the literature.

potential conflicts of interest with respect to the research, authorship, and publication of this article.

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Клиникалық жағдай: Қазақ ер адамдарындағы гипотенарлы Хаммер синдромы

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Түйіндеме

Гипотенарлы балға синдромы - гипотенарлы аймақтағы шынтақ артериясының жарақаттан кейінгі өзгеруі. Гипотенарлы балға синдромы - сирек кездесетін ауру және дәрігерлер арасында аз белгілі, бұл диагнозды қиындатады.

Мақаланың авторлары мұнда қазақ халқының арасында гипотенарлы балға синдромы клиникалық жағдайын саралады.

Аталмыш синдромның клиникалық жағдайы Қазақстанда бірінші рет белгілі, сондықтан біз оны эксклюзивтілігіне байланысты ұсынамыз. Шынтақ артериясының аневризмасы сияқты гипотенарлы балға синдромының мұндай асқынуын оңтайлы емдеу хирургиялық болып табылады. Аневризманы хирургиялық алып тастау әдетте қайталануды немесе ауыр асқынуларды тудырмайды.

Түйін сөздер: гипотенарлы балға синдромы, шынтақ артериясының аневризмасы, шынтақ артериясының аневризмасын жою, микрохирургия, қол хирургиясы.

Клинический случай: Синдром гипотенара у казахского мужчины

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Резюме

Синдром гипотенара – посттравматическое изменение локтевой артерии в области гипотенара. Синдром гипотенара - редко встречающееся заболевание и малоизвестное среди врачей, что затрудняет его диагностику.

Авторы данной статьи представили клинический случай синдрома гипотенара среди казахстанского населения.

Обсуждаемый клинический случай синдром гипотенара является первым известным в Казахстане, поэтому мы представляем его в связи с его эксклюзивностью. Оптимальный вид лечения такого осложнения синдрома гипотенара, как аневризма локтевой артерии – хирургическое. Хирургическое удаление аневризмы обычно не вызывает рецидива или серьезных осложнений.

Ключевые слова: синдром гипотенара, аневризма локтевой артерии, удаление аневризмы локтевой артерии, микрохирургия, хирургия кисти.