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Review Article

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Volkmann Syndrome: A Case and Literature Review

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ABSTRACT

It was first described in 1881 by Volkmann V R in children treated with plaster for fractures of the humeral palette.

In 1975, Holden specifies that muscular ischemia could be secondary either to an attack of the main vascular axis (type I lesion), or to a direct lesion of the muscular compartment, while the vascular trunk is intact (type II lesion).

It is a serious sequel, involving the functional prognosis of the affected limb, affecting the performance and socio-professional integration of the future adult.

Keywords: Traditional Treatment, Compartment Syndrome, Volkmann Syndrome, Amputation

Introduction

It is a retraction of ischemic origin of the muscles of the anterior compartment of the forearm associated with paralysis of the extrinsic and intrinsic muscles of the hand. It is a definitive sequela of anterior compartment syndrome of the forearm defined as prolonged hyperpressure in the anatomical muscle compartment(s) of intrinsic origin (hematoma, inflammatory edema) or extrinsic (plaster, traditional treatment) or mixed [1]. Several Benkeddache, Sundararaj classifications and Page-Scaglietti-Gosset, Seddon surgical techniques have been described for management but amputation retains a place especially in the sequelae of traditional treatment [2-5].

Observation

This is a 10-year-old right-handed student boy who was the victim of a play accident 17 months ago, received for consultation on 09/19/2018 for old trauma to the right forearm after traditional treatment. There was shortening and diffuse amyotrophy of the forearm, pseudotumoral swelling of the hand taking the appearance of a turtle and claw-like fingers, the hand in pronation, the elbow in supination, a circumferential scar with an orange peel appearance.

Palpation was painless, radioulnar pulses were not perceptible, capillary pulse was present with normal recoloration time, mobility in the fracture site, ankylosis of the wrist and elbow, sensitivity and motor function of the hand and fingers were lost.

Due to difficulty in social integration, he protects himself with a pocket that can hide the limb (Figure 1,2 and 3).

Standard radiography showed radial atrophic nonunion with 11 cm of diaphyseal bone loss, distal radioulnar dislocation, elbow ankylosis, wrist algodystrophy and sabre deformity of the ulna (Figure 4 and 5). He was hemodynamically stable, the hemostasis assessment was normal, rhesus group A positive with a hemoglobin level of 11 mg/dl. A transhumeral amputation was performed and the specimen sent to pathology concluding that it was a fibrotic fibroma of the hand. The stump healed in 12 days. His first appointment at 2 months was unremarkable.

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Figure 1: Garçon de 10 ans avec sa poche de protection

Figure 2: Membre hors poche

Figure 3 : Main pseudotumorale en aspect de tortue, les doigts en griffe, avant-bras raccourcit et une amyotrophie diffuse

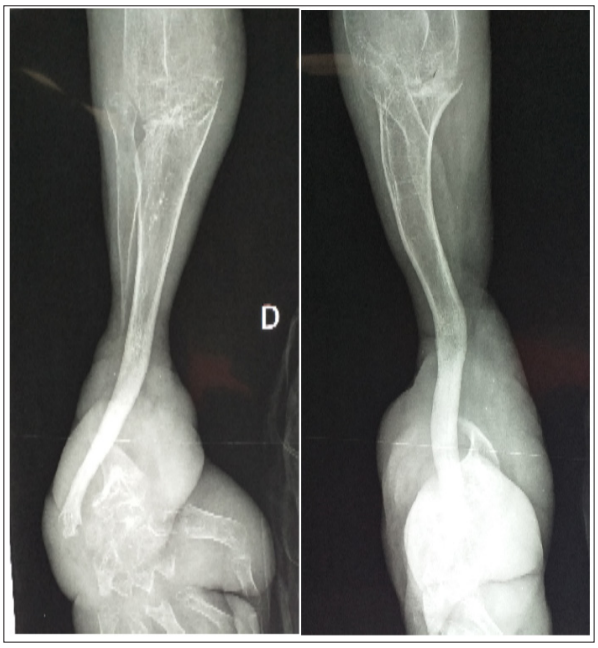

Figure 4: Radio montrant la pseudarthrose avec perte de substance osseuse radiale, dislocation radio-ulnaire distale et déformation ulnaire en sabre.

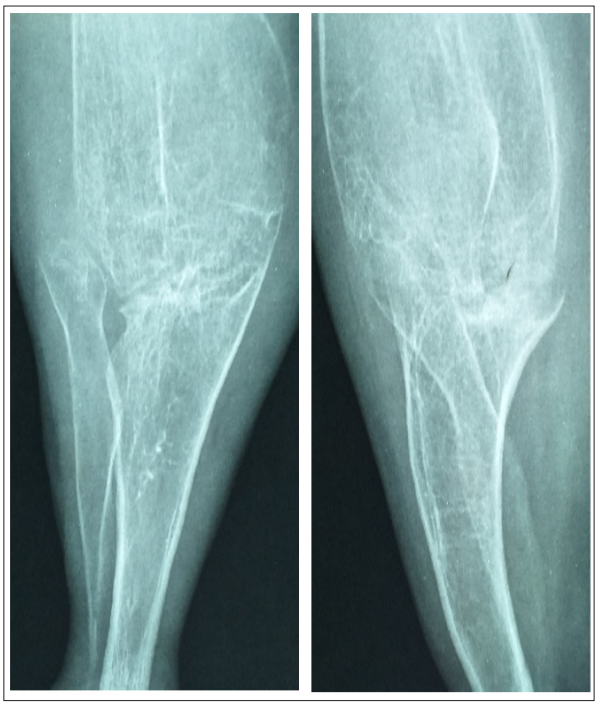

Figure 5: Ankylose radiologique du coude

Discussion

In developing countries, particularly in Mali, the population still largely uses traditional medicine to treat trauma and many other pathologies.

Gangrene amputations of limbs following traditional trauma treatment are a common practice in African settings [6,7].

In the literature, this pathology is common in male children and in the thoracic limbs [1]. It is also the thoracic for our patient.

In the West, the etiology is mainly plaster treatment in Africa, traditional treatment is the primary cause of Volkmann syndromes

as confirmed by our case [1,8]. Immobilization is performed on the basis of palpation and mobilization of the traumatized limbs, meaning that most traumas are taken as fractures by traditional therapists [9,10]. Children being the main victims of traditional treatment, this could be explained by the fact that the child is culturally and financially dependent on other members of the family, therefore deprived of any decision-making power in everything that concerns him.

As for our patient, it was the dominant limb that was amputated but he also dropped out of school out of shame. It was Holden type II, a direct lesion of the muscle compartments of the right forearm with amyotrophy, abolished sensitivity and motor skills, while the vascular trunk was intact [11].

Several Benkeddache, Sundararaj, Tsuge classifications have been described and most of these classifications only concern the soft parts [2,3,12].

In terms of the soft parts, this is the severe Tsuge stage with damage to the flexor and extensor muscles, severe nerve damage with loss of sensitivity and motor skills associated with trophic disorders [12].

The particularity of our single case is that there is a bone component made up of atrophic pseudarthrosis, enormous bone loss, sabre-shaped ulnar deformity and an articular component made up of ankylosis of the elbow and distal radio-ulnar dislocation.

The Page-Scaglietti-Gosset, Seddon surgical techniques have been described for management but amputation still has a place in certain cases of sequelae of traditional treatment such as ours [4,5].

Conclusion

The management of Volkmann syndrome must be done upstream in the prevention, screening of acute compartment syndromes. Traditional treatment aggravates the after-effects and the management. Surgical procedures give good functional results and allow a return to socio-professional activities but in certain situations amputation is necessary.

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Conflict of interest

The authors declare no conflict of interest in relation to the writing of this article.

Author Contributions

- Dr TRAORE Terna and Dr TOURE Layes: contributed to the study design and manuscript writing,
- Dr DIALLO Souleymane and Dr DIALLO Aboubacar: data collection and analysis
- Dr TRAORE Terna and Dr DIALLO Mahamadou: patient monitoring
- Pr HANS-MOEVI Aristide: revised, validated the study protocol and approved the final version of the manuscript.

References

1. Volkmann RV. Die Ischaemischen Muskellahmungen und Kontracturen. Zentrablatt fur Chirurgie. 1881. 8 : 801-803.
2. Benkeddache Y, Gottesman H, Hamidani M. Proposition d'une nouvelle classification du syndrome de Volkmann au stade de séquelles. Annales de Chirurgie de la Main. 1985. 4: 134-142.
3. Sundararaj GD. Management of Volkmann's ischaemic contracture of the upper limb. J Hand Surg Br. 1985. 10: 401-403.
4. PAGE CM. An operation for flexion in the forearm, JBJS. 1923. 5 : 233-254.
5. Seddon HJ. Volkmann's contracture. Treatment by excision of the infarct. J Bone Joint Surg Br. 1956. 38: 152-174.
6. Nwankwo OE, Katchy AU. Limb gangrene following treatment of limb injury by traditional bone setter (Tbs): a report of 15 consecutive cases. Niger Prostgrad Med J. 2005. 12: 57-60.
7. Togo S. Thèse de médecine, Les complications ischémiques aiguës suite au traitement traditionnel des traumatismes des membres dans les services de chirurgie orthopédique et traumatologique de l'hôpital de Kati et de l'hôpital Gabriel Touré, Thèse méd., Bamako. Université Bamako. 2007. 7 : 52.
8. Khadir A, Elbouchikhi M, Riah L, Cherquaoui D, Lmidmani F, et al. Etiology of atypical Volkmann's syndrome : restraint by traditional jbira about 5 cases. Ann Phys Rehabil Med. 2012. 55: 242.
9. Adami AM, Ngaringuem O, AbakarM N, Bogol J, Choua O. Les amputations des membres liées au traitement traditionnel des fractures des enfants à l'Hôpital de la Mère et de l'Enfant de N'djaména Tchad. Rev. Sci. du Tchad. 2017. 1: 73-80.
10. Traore Terna, Toure Layes, Diassana Mathias. Amputation des membres suite au traitement traditionnel à l'Hôpital de Mopti (Mali). Health Sci Dis. 2021. 22: 76-80.
11. Holden CE. Compartmental syndrome following trauma. Clin Orthop. 1975. 113: 95-102.
12. Tsuge K. Management of established Volkmann's contracture. Oper Hand Surg. 1988. 591-607.