

CASE REPORT

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Bilateral carotid ischemia by probable strangulation in an infant: About a case and review of the literature

Yakhya Cisse, Thiam Mbaye, Faye Mohameth, Bakonde Essosolim, Barry Lounceny Fatoumata, Badiane Seydou Boubakar

ABSTRACT

Introduction: Strangling an infant is one of the most common methods of murder. Although rare, it remains a serious condition because of its complications.

Case Report: We report a 3-month-old infant, probably strangled, who was admitted to Fann's emergency service with altered consciousness 10 hours prior to admission. Computed tomography (CT) scan showed a range of hypodensity in the carotid territories. The victim died later of secondary complications.

Conclusion: Infant strangulation injuries are often fatal. Management must also include forensic aspects.

Keywords: Carotid ischemia, Complications, Infant, Strangulation

doi: 10.5348/100089Z06CY2020CR

INTRODUCTION

In the West, strangulation has long been the most outdated and most frequently used method of murder [1, 2]. Strangulation in children, although rare, remains a serious and potentially life-threatening condition with associated complications [3]. We report the case of a 3-month-old infant that we managed.

CASE REPORT

This is a 3-month-old male infant, the eldest son of two middle school teachers, with no particular pathological history. He was brought by his parents to the emergency service of the Fann's University Hospital Center for consciousness disorders that had been evolving since 10 hours before his admission.

The circumstances surrounding the occurrence remain unclear. The child was in the care of a nanny. In the evening, the parents had found the inert child next to the maid. The maid could not give any explanation for the child's condition.

The intake examination revealed tachycardia at 145 beats/min, blood pressure at 80/50 mmHg, respiration rate at 30 cycles/min, weight of 5.7 kg, and height of 60 cm.

The neurological examination had revealed: disturbances of consciousness with a pediatric Glasgow coma scale at 9/15, damage to the 3rd cranial pair on the right with ptosis and mydriasis, mobilization of the 4 limbs on stimulation, muscle tone was normal, tendon reflexes were lively and there was no cervical spinal syndrome.

Examination of the cephalic part revealed a slight puffiness of the face associated with a circumferential bruise area (Figure 1).

In addition, there were skin's signs of mechanical compression in the lower cervical region with subcutaneous emphysema. The rest of the examination was unremarkable hemostasis assessment.

How to cite this article

Cisse Y, Mbaye T, Mohameth F, Essosolim B, Fatoumata BL, Boubakar BS. Bilateral carotid ischemia by probable strangulation in an infant: About a case and review of the literature. Case Rep Int 2020;9:100089Z06CY2020.

Article ID: 100089Z06CY2020

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Received: 01 August 2020
Accepted: 02 November 2020
Published: 31 December 2020

The cerebral CT scan carried out had made it possible to objectify a range of bilateral subcortical hypodensity under the fronto-temporo-parietal cortex involving the lenticular and caudate nuclei, sparing the thalamus, the occipital lobe, and the posterior fossa (Figure 2). The diagnosis of probable bilateral carotid ischemia by strangulation was made.

The child was admitted to intensive care for further treatment. Four hours after admission, the infant presented a worsening of his clinical condition with a pediatric Glasgow coma scale at 6/15, bradycardia at 50 beats/min, respiratory distress with 70% O₂ saturation and polypnea at 80 cycles/min, hypothermia at 35.6 °C, requiring intubation and sedation.

Neurosurgical abstention was indicated due to the bilateral and diffuse nature of the lesions and the child died 24 hours later after admission to intensive care.



Figure 1: Facial skin bruises.

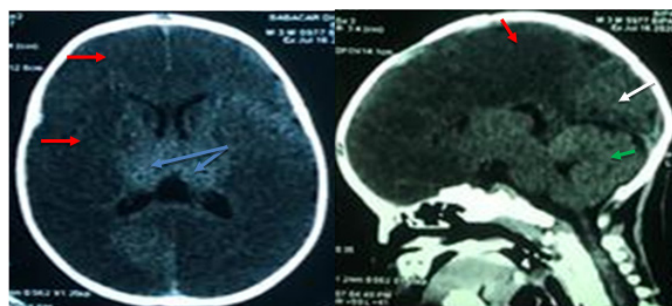


Figure 2: CT scan. (A) Axial section, (B) Sagittal reconstruction shows: bilateral carotid ischemia in the form of a subcortical hypodensity (red arrow), under the fronto-temporo-parietal cortex, sparing the thalamus (blue arrow), occipital lobe (white arrow), and cerebellum (green arrow).

DISCUSSION

Illegal killings of infants are an emotional burden on the victim's family and are widely reported in the media. The incidence of strangulation-related infant deaths in Africa is not well known. However, it is 55.9% in the Mathews [4] series in South Africa. Data were also found in other countries outside Africa: Verma [5] in India had an incidence of 22.4%, Sabo [6] in Peoria had 7.4%, Nixon [7] in England and Wales was 8.08% (11 cases out of a total of 136). In America Shapiro-Mendoza et al. reported a death rate linked to accidents by strangulation and suffocation varying between 2.8 and 12.5 deaths per 100,000 live births [8]. Strangulation is more common in the pediatric population [6] and is often linked to homicides [5, 7, 8]. Boys are more victims of death by strangulation [5, 8–10]. In our case it would most likely be manual strangulation. However, in the literature review, strangulation by ligature is 3 times higher than manual strangulation [4]. In our case the infant had no associated cervical bone lesion, which can be explained by the elasticity of these bones [11]. The site of injury was often cephalic and was in 20% of lacerations, abrasions, and bruises [6]. The superficial location of the carotid arteries makes it easily susceptible to compression during strangulation. On the other hand, the vertebral arteries are relatively protected by their location in the foramina [2]. This explains the ischemic territory found in our case. In some studies, lesions causing carotid obstruction in infants are rare [6, 12, 13]. Intracranial hypertension is rarely present on admission; however, late onset can occur within 24 hours leading to cerebral death [14]. The occurrence of secondary systemic stroke after strangulation is the major element to be tracked and treated to avoid progression to death [15]. At admission, the following are defined as indications of poor prognosis: prolonged coma, presence of seizures, diabetes insipidus, and hyperglycemia [4]. In our case, only consciousness disorders were found as part of the poor prognosis. Its management will have to include forensic aspects including medical reports and a judicial inquiry. In our case, an investigation is conducted with a view to charging the maid. Once the child is found, the neck examination should be performed at the scene as some artifacts may occur during transport of the child. In the Senegal Penal Code, according to the article (Law n° 76-02 of March 25, 1976), any person who illegally kills a person will be punished by death. Statements of relatives, drug addiction can provide important information on the mode and origin of death. The autopsy must be systematically carried out, since suspended cases are accepted as criminal cases [16–20].

CONCLUSION

Because of their serious neurological complications, strangulation injuries are often fatal in infants. The

helpless condition of the infant favors homicide by manual strangulation. In the emergency department, consideration must be given not only to the management of these injuries, but also to the management of the forensic problems associated with them.

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Author Contributions

Yakhya Cisse – Conception of the work, Design of the work, Drafting the work, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Thiam Mbaye – Conception of the work, Design of the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Faye Mohameth – Conception of the work, Design of the work, Drafting the work, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Bakonde Essosolim – Conception of the work, Design of the work, Drafting the work, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Barry Lounceny Fatoumata – Acquisition of data, Analysis of data, Drafting the work, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Badiane Seydou Boubakar – Conception of the work, Design of the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Guarantor of Submission

The corresponding author is the guarantor of submission.

Source of Support

None.

Consent Statement

Written informed consent was obtained from the patient for publication of this article.

Conflict of Interest

Authors declare no conflict of interest.

Data Availability

All relevant data are within the paper and its Supporting Information files.

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