

# Left Hemispherical Subdural Hematoma on the Same Side as the Motor Deficit (Kernohan)

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## Abstract

Chronic subdural hematoma represents 25% of traumatic subdural collections; common in elderly subjects with a clear male predominance. It occurs over the age of 50 in more than 90% of cases and 50% of patients have no history of head trauma even if the latter remains the main risk factor with others such as coagulopathy, anticoagulant treatment, chronic alcoholic poisoning. Its discovery is rarely fortuitous and has an important clinical polymorphism including an intracranial hypertension syndrome (complete or incomplete). We report a clinical case of a left hemispheric subacute subdural hematoma with post-traumatic falcorial involvement in a 70-year-old patient admitted with a picture of impaired consciousness and weakness of the left hemibody. The objective of this work is to draw the attention of neurosurgeons and neurologists to the paradoxical existence of the neurological deficit on the same side as the causal brain lesion.

## Keywords

Subdural Hematoma, Kernohan

## 1. Introduction

Chronic subdural hematoma (CSHD) is a collection of aged blood clots located between the dura and the arachnoid. It is then [1] a liquefied and encapsulated effusion, located in the subdural space, at the level of the cerebral convexity. O. DECAUX [2] specifies that this collection occurs after a trauma, sometimes minimal, often forgotten by the patient and that the free interval, the asymptomatic

period separating the trauma and the first symptom, can last several weeks [3].

Subdural hematoma is often a complication of head trauma, sometimes even benign. This blood collection presents in the cranium an occupying process acting mechanically on the cerebral matter which is then compressed and pushed back towards the midline.

The clinical expression is often related to the location but also to the volume of the hematoma and is characterized by a contralateral sensorimotor deficit at the site of the hematoma often associated with cognitive function disorders and/or a state of mental confusion more or less obvious. The location of the sensorimotor deficit on the same side as the blood collection is an exceptional clinical form (10% of cases) [4]. According to Kernohan, this phenomenon would be due to the compression of the contralateral peduncle pushed back onto the free edge of the tentorium of the cerebellum, in connection with the mass effect of the blood collection. It is mainly encountered in cases of extra dural hematoma. In all cases, knowledge of the occurrence of this phenomenon once again underlines the imperative nature of brain scanning in any patient suffering from head trauma associated with localization signs with or without disturbances of consciousness [5]. This examination thus makes it possible to correct the presumptive topographic diagnosis in one patient out of 10; essential factor in the perspective of a neurosurgical approach (choice of the side of the approach) [6].

Although the treatment of HSDC is surgical in the majority of cases, it remains one of the easiest in neurosurgery, its prognosis nonetheless remains one of the best [7] [8] [9] [10].

We set out, through this case, to identify the different aspects of this pathology, including the contributing or etiological factors, the clinical and paraclinical profile, the treatment as well as the evolution and prognosis.

## 2. Observation

Patient, 70 years old, male, admitted to the emergency department of the Sino-Guinean Friendship Hospital in Conakry on August 5, 2023 for disorders of vigilance, incoherent language, psychomotor agitation and weakness of the left hemibody diagnosed 04 days before admission for stroke being ischemic or hemorrhage.

Evolution: 06 days.

History of malaria, note-public road accident two weeks before admission to our hospital.

Lifestyle: tobacco, cola.

Clinical data history: those close to him report that he complained of headaches and used self-medication based on paracetamol 1000 mg and non-steroidal anti-inflammatory drugs. In the following days, the patient will notice the gradual onset of headaches of increasing intensity, resistant to the usual analgesics, associated with a state of drowsiness and physical asthenia. After failure of numerous

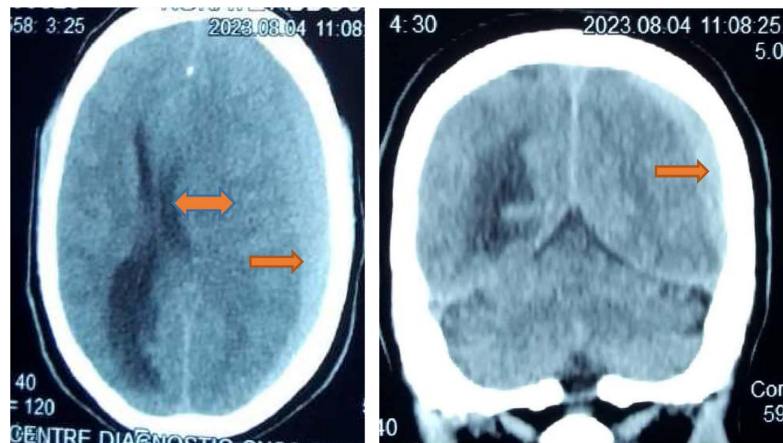
therapeutic trials, a consultation at the general medicine department of the Mandiana prefectural hospital revealed during the first consultation: patient in altered general condition, hyposthenic, BP: 160/10mmHg. At the end of their clinical and paraclinical examination the diagnosis of serious malaria was retained and submitted to treatment, given the installation of a deficit of the left hemibody, he was referred to the international clinic of Conakry or a brain scan without injection iodine was carried out for a stroke, which revealed a subacute subdural hematoma and referred to our department.

On admission to our hospital, the clinical picture was dominated by:

- signs of diffuse cerebral suffering: obtundation of consciousness with a Glasgow score rated at 12/15 (V = 3, M = 5, Y = 4); psychomotor agitation.
- signs of right pyramidal damage: Proportional left hemiparesis with segmental muscle strength rated at 3/5.
- discreet signs of meningeal irritation: neck stiffness and positive lower Brudzinski.
- in addition, we noted moderate anisocoria (left pupil > right pupil) with preserved pupillary reaction to light.

Syndromological diagnosis: right pyramidal syndrome, meningeal syndrome.

Paraclinical examinations: on the brain CT images without contrast, in axial sections of 1 cm, we discover at the supratentorial level a left subacute subdural hematoma with strong compression of the ipsilateral ventricle and a deviation of the median structures towards the right (**Figure 1**).



**Figure 1.** Brain CT without contrast, in series of representative sections: demonstration of an acute left subdural hematoma (arrow) during recent bleeding in the parieto-occipital region. Strong compression of the ipsilateral ventricle with dislocation of the midline to the right (double horizontal arrow).

The field exploration assessment (examination of blood count, hemoglobin level, hematocrit, blood grouping and Rhesus factor) did not reveal any particularities.

In total: the diagnosis retained was that of a left hemispheric subacute subdural hematoma; hemiparesis ipsilateral to the hematoma. This concept clearly re-

flects the Kernohan phenomenon: lateralized intracranial occupying process, leading to a sensory-motor deficit on the same side. Treatment: evacuation trepanation of the left subdural hematoma. It was in a collapsed general state with impaired consciousness (Glasgow score: 12/15) that the patient underwent neurosurgical intervention on 08/06/2023: placement of a trephine hole and evacuation of a large left subdural hematoma under fairly strong pressure (made of blackish blood with a volume estimated at approximately 90 ml) described above. The postoperative results were good, the surgical wound healed by first intention. Clinically, the first signs of improvement were recorded within 24 hours after evacuation of the hematoma: improvement in the Glasgow score, regression of the confusional state, return of muscular strength in the limbs of the patient, the left hemibody. Forty-eight hours (48 hours) later, autonomy was complete. The postoperative scan evaluation after 5 days in 10 mm sections did not suggest any hematic collection in the hemisphere (**Figure 2**).



**Figure 2.** Control brain CT without contrast, in series of representative sections: demonstration of a frontal pneumonitis (star) with complete evacuation of the chronic subdural hematoma.

### 3. Comments

Unlike the classic clinical picture of brain lesions characterized by the appearance of symptoms contralateral to the lesion, the left compressive subdural hematoma was on the same side as its right hemi syndrome and/or the hemi trunk which can claim the paternity of left hemi syndrome. According to Kernohan, repression of the brainstem by a supratentorial process can in some cases lead to compression of the cerebral peduncles on the free edge of the tentorium of the cerebellum on the opposite side. The suffering of the motor pathways located on the opposite side clearly explains the existence of the deficit picture on the same side [6]. This opinion is especially reinforced by the absence on the scan sections of other associated brain lesions located contralateral to the hematoma but also and above all by the rapidly progressive disappearance of the hemiparesis immediately after the lifting of the compressive phenomenon ipsilateral to this hemiparesis [6]. Healing criteria were based on complete disappearance of symptoms after evacuation of the hematoma.

The contribution of CT here, more than elsewhere, from a neurosurgical point of view has been invaluable. In our context of very limited accessibility to this

examination (high cost compared to the income of the average citizen), exploratory trephination guided solely by the data of the clinical examination in such circumstances, could well prove to be unsuccessful. The discovery of this blood collection would explain the clinical picture related to bleeding in the subdural space (blood still hyper dense in the parieto-occipital region). The merit of this observation is to alert the attention of the practitioner in general, the neurologist and especially the neurosurgeon in particular to the possibility of a misleading clinical picture and therefore of localizing value which is not always formal in patients who are victims of cranioencephalic trauma with suspicion of intracranial hematoma. The evolution and prognosis of chronic subdural hematoma are generally good, as was the present case.

### Authors' Contributions

Cherif M; Berete I, Souare IS jnr; Bah A, Diawara S, Dramé BA, Camara AM, Traore E, Sylla ML, Sow O, Kezely LB, Souare IS gathered the data. All the authors revised the article and approved the final draft of the article that was submitted. Cherif Mohamed provided guidance toward the completion of the article.

This study was approved by the ethics committee of the national hospital of Guinea (Republic of GUINEA).

### Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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