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Original article

Abnormal movements indicative of bacterial infectious meningoencephalitis

Mouvements anormaux révélant une méningo-encéphalite infectieuse bactérienne

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Résumé

Les manifestations neurologiques liés aux infections neuro-méningées sont extrêmement variées, celles-ci regroupent entre autres les mouvements anormaux qui dans certains cas peuvent être le mode révélateur de l'atteinte neuroméningée. Nous rapportons 2 observations cliniques de patients de sexe masculin âgés respectivement de 90 et 69 ans. Les signes cliniques étaient un parkinsonisme, des mouvements balliques, des mouvements dystoniques des membres inférieurs et un coma. Ces manifestations cliniques sont fonction de l'atteinte des noyaux gris centraux et/ou du tronc cérébral et du mécanisme neuro-inflammatoire. Les principaux germes isolés étaient notamment le pneumocoque et le de bacille de koch. Le traitement a reposé sur l'association d'un traitement symptomatique et d'une antibiothérapie à base de céphalosporines de troisième génération d'une part et d'un traitement antituberculeux d'autre part. L'évolution était marquée par un décès dans un cas et favorable dans l'autre respectivement au bout du 3ème et 15ème jour d'hospitalisation. La prévention secondaire est entre autres le meilleur moyen de lutte contre ces maladies.

Mots-clés : Mouvements Anormaux, Méningo-encéphalite, Bactérie, Sénégal.

Abstract

The neurological manifestations related to neuromeningeal infections are extremely varied, including abnormal movements that in some cases can be the telltale mode of neuromeningeal involvement. We report 2 clinical observations of male patients aged 90 and 69 years, respectively. Clinical signs were parkinsonism, ballic movements, dystonic movements of the lower limbs, and coma. These clinical manifestations are a function of the involvement of the basal ganglia and/or brainstem and the neuroinflammatory mechanism. The main germs isolated were pneumococcus and Koch's bacillus. Treatment was based on a combination of symptomatic treatment and antibiotic therapy with third-generation cephalosporins on the one hand and anti-tuberculosis treatment on the other. The course

was marked by one death in one case and favourable death in the other at the end of the 3rd and 15th day of hospitalization respectively. Secondary prevention is, among other things, the best way to combat these diseases.

Keywords: Abnormal movements, Meningoencephalitis, Bacteria, Senegal.

Introduction

Abnormal movements are motor activities independent of willpower, most often resulting from dysfunction or injury to the basal ganglia. Infections of the central nervous system can manifest as movement disorders such asonetremor, Parkinsonism, chorea or ballism [1-3].

In the light of two clinical observations and data from the literature, we report the clinical, pathophysiological, etiological, therapeutic and evolutionary aspects of a case of pneumococcal meningoencephalitis revealed by acute parkinsonism and a case of tuberculous meningoencephalitis revealed by ballic movements.

Clinical cases

Case n°1

A 90-year-old patient with no significant history admitted to the emergency department for disturbance of consciousness and abnormal movements with generalized tremor type evolving for 48 hours before in a febrile context. The neurological examination showed a coma with a Glasgow score of 6/15, an extrapyramidal syndrome consisting of hypertonia of the 4 limbs and a tremor of the head. The patient had other abnormal movements such as orooral clonia and dystonia of the lower extremities. Examination of the other devices revealed regular tachycardia at 105 beats per minute, crackling rattles on the right and respiratory distress syndrome with 88% desaturation, infectious syndrome with a fever of 39°, blood pressure at 140/100 mm Hg.

The parenchymal window brain scan performed had objectified bi-fronto-temporal atrophy. The lumbar puncture performed showed a cloudy fluid with 213 leukocytes/mm3 predominantly neutrophils at 90% and 10% lymphocytes, hyperalbuminrhachia at 15.66 g/L, hypoglucorhachy at 0.01 g/L. Direct examination showed many gram-positive Cocci and detection of bacterial antigens in CSF was positive for Streptococcus pneumoniae.

In biology we had neutrophil-predominant leukocytosis with a CRP of 165 mg/L. Retroviral serology was negative. The patient did not have ionic disorders.

The chest x-ray showed a focus of left pulmonary condensation with effacement of the diaphragmatic costal culs de sacs and perihilar condensation.

The diagnosis of pneumococcal meningoencephalitis was retained. The patient was oxygenated with baseline resuscitation measures and put on a third-generation cephalosporin antibiotic (Ceftriaxone) at a dose of 4 g/D combined with corticosteroid therapy (betamethasone) 0.5 mg/kg/day, an antipyretic and low-molecular-weight heparin as a preventive dose. The short-term course was marked by the persistence of the picture of respiratory distress and the worsening of neurological signs. On the 3rd day of hospitalization, the patient died of cardiopulmonary arrest.

Case n°2

This was a 69-year-old patient seen for abnormal left hemibodily movements associated with behavioral disorders. The onset of signs dates back to 4 months ago, marked by the onset of a productive cough in a context of evening and nocturnal fever associated with an alteration in the general condition. A month later, there was a change in behaviour in the form of incoherent speech, followed gradually by abnormal left hemicorporeal movements of the ballic type.

In his history, he is known to be hypertensive and not followed. On admission there was a syndrome of alteration in the general condition, involuntary, abrupt, spontaneous movements with a sudden drop in tone involving the left hemibody predominating

proximal to the roots of the limbs and of great amplitude suggesting ballic movements, a delirium syndrome, an infectious syndrome, a syndrome of right pulmonary condensation.

A parenchymal window brain CT scan with contrast agent injection showed multiple contrast-taking hypodensities after injection of contrast medium at the level of the right lenticular and parieto-occipital nucleus, left fronto-parietal associated with thermowell hypodensity.

A chest X-ray was performed and showed the presence of a right apical excavation with right interstitial alveolo infiltrates in favor of tuberculosis-specific pneumonitis.

Biology revealed hyperleukocytosis at 11250 leukocytes predominantly lymphocyte, C-Reactive Protein elevated at 145 mg/L, hyponatremia at 126 mmol, and HIV-negative retroviral serology. Lumbar puncture revealed albuminorachia at 0.54 g/L, glucorachia at 0.51 g/L with concomitant blood glucose at 1.35 g/L, 4 polynuclear and a negative myco-viro-parasitic culture. The GeneXpert on gastric tubing detected Mycobacterium tuberculosis DNA.

We have retained the diagnosis of pulmonary and neuromeningeal multifocal tuberculosis with abnormal ballic movements as the mode of revelation. The patient was put on Prednisone with anti-tuberculosis drugs (rifampicin, isoniazid, etambutol, pyrazinamide), Haloperidol and henoxaparin as a preventive dose.

The course of hospitalization on D15 was marked by an improvement in the state of consciousness by the disappearance of delirium, a decrease in ballic movements and apyrexia.

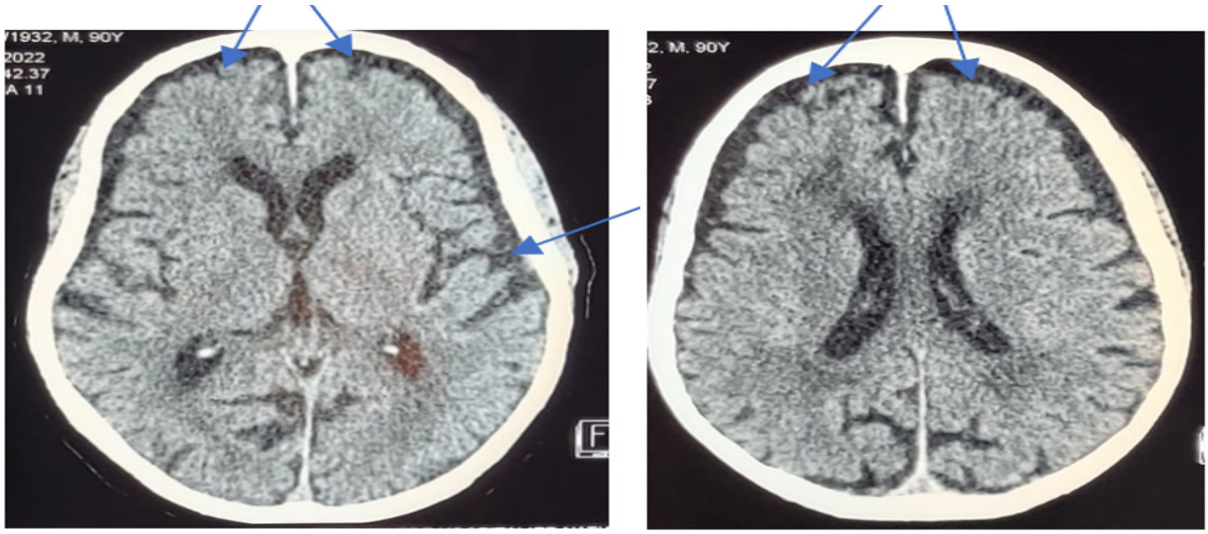

Figure 1: Axial cross-sectional brain CT scan showing bi-frontotemporal atrophy

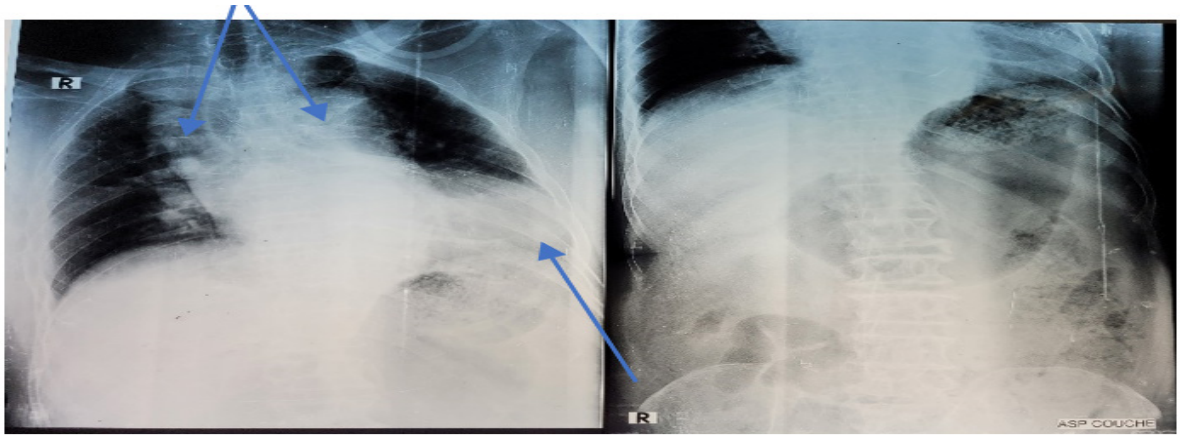

Figure 2: Frontal chest x-ray showing a focus of left pulmonary condensation with clearing of diaphragmatic costal culs and perihilar condensation

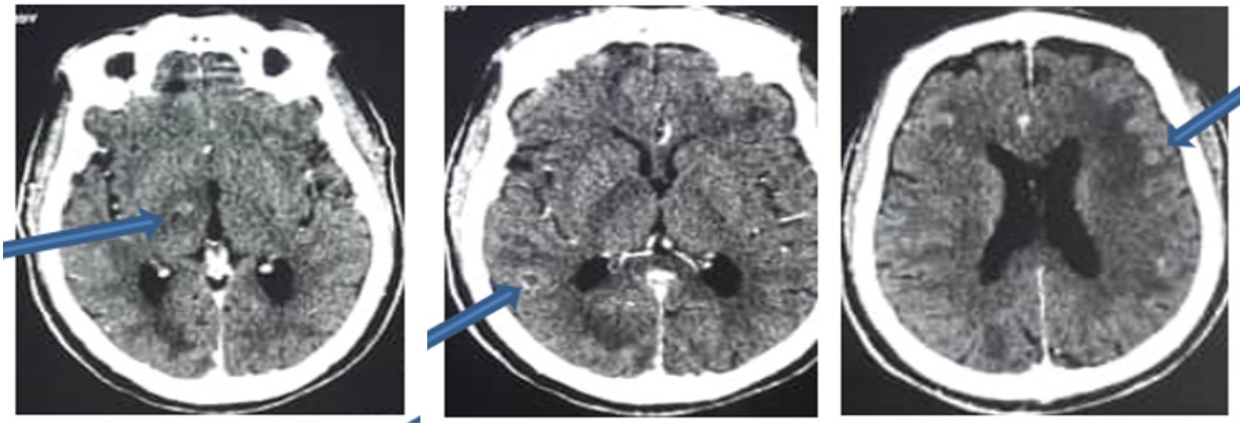

Figure 3: A CT scan of the brain with injection of axial cross-sectional contrast medium shows multiple hypodensities taking contrast at the level of the right lenticular nucleus, right parieto-occipital, left fronto-parietal associated with hypodensity in the left fronto-parietal finger

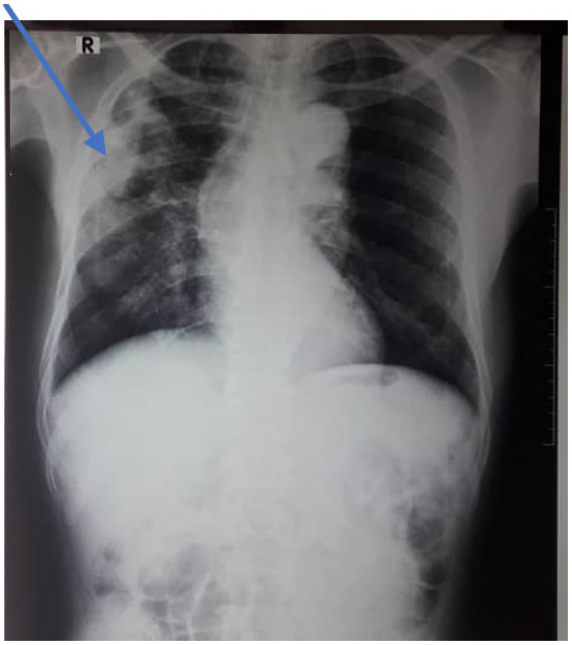

Figure 4: A chest X-ray performed shows the presence of a right apical excavation with right interstitial alveolo infiltrates in favor of tuberculous specific pneumonitis

Discussion

These observations illustrate cases of meningoencephalitis revealing abnormal, hyper and hypokinetic movements. The neuromeningeal infectious etiology may be multifaceted resulting from either involvement of the basal ganglia and/or brainstem or related to autoimmune mechanisms[4]. Bacterial meningoencephalitis is a clinical polymorphism with a clearly variable epidemiology represented mainly by male sex, young age and low socio-economic status[5]. The mode of onset is variable and does not reflect the severity of neuromeningeal involvement, the data suggest that the neurological clinical presentations of classical bacterial meningoencephalitis are disorders of consciousness, signs of focus, convulsive seizures[2,4]. In addition, extrapyramidal signs have been described in certain viral meningoencephalitis such as West Nile virus, VZV[6] and in some cases of bacterial meningoencephalitis, particularly brucell, where the reported clinical signs are superimposed on those found in our patient (clinical case 1) [7]. Although ballic movements indicative of neuromeningeal tuberculosis have not been reported in the literature, other abnormal movements such as dystonias and tremors have been reported in some cases[4]. However, in viral encephalitis (HSV1 type) with basal ganglia involvement, choreoathetosis and ballic movements have been described in several patients [8]; This corroborates with the clinical signs found in our patient via involvement of the basal ganglia, in this case the lenticular nuclei (case 2). Indeed, it could be that some infectious encephalitis have a predilection for deep regions, namely the basal ganglia and the brainstem, with a pathophysiological mechanism that may be infectious, autoimmune, post-infectious, or paraneoplastic, but most often with a poorly described pathophysiological mechanism [8].

In our observations, extrapyramidal syndrome and abnormal ballic movements were the telltale signs of these neuromeningeal infections, including pneumococcal and Mycobacterium tuberculosis; although in the literature no studies seem to establish a relationship between these different entities.

The diagnostic examination of choice should be magnetic resonance imaging (MRI) for involvement of the basal ganglia in T2 and flair sequence hypersignal. In our patients, CT scans showed bi-frontotemporal atrophy (case 1), although the predictors of the presence of an abnormality (cerebral edema, hydrocephalus, cerebral infarction, abscess or empyema) on brain CT scan in the case of pneumococcal meningoencephalitis are among others an age greater than 60 years, immunosuppression, signs of neurological focus, Disturbances of consciousness [4,9,10]. In the same vein, tuberculosis (case 2) occupies second place after leptomeningeal involvement of CT abnormalities in neuromeningeal tuberculosis [10]

Treatment is etiologic and symptomatic; Bacterial neuromeningeal infections remain a diagnostic and therapeutic emergency. Their prognosis is closely linked to the early diagnosis and the speed of therapeutic management with a generally favourable trend [1,2,4]. But in some cases they can progress to death, comas or neuropsychological sequelae [11]. Prevention involves improving socio-economic conditions, screening and treating BK-positive patients, a source of contamination, and finally vaccination with BCG and pneumococcal disease [12]. All these entities that are still poorly circumscribed deserve to be revisited in a perpetual way.

Conclusion

Abnormal movements may be indicative of bacterial infectious meningoencephalitis. Our patients illustrate semiologically variable clinical presentations depending on the lesional mechanism of the basal ganglia.

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