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LUMBAR PUNCTURE MUST IT BE PRECEDED BY THE OCULAR FUNDUS? MISCONCEPTIONS AND BAD PRACTICES AT THE UNIVERSITY HOSPITAL OF BRAZZAVILLE
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LUMBAR PUNCTURE MUST IT BE PRECEDED BY THE OCULAR FUNDUS? MISCONCEPTIONS AND BAD PRACTICES AT THE UNIVERSITY HOSPITAL OF BRAZZAVILLE

P. W. ATIPO-TSIBA, B. DIATEWA and B. O. IBARA

ABSTRACT

***Background*: The ocular fundus is the basis for the diagnosis of eye posterior segment lesions. Increasing the pressure of the cerebrospinal fluid that surrounds the optic nerve, whatever the cause, can lead to papilledema which signing intra cranial hypertension. The ophthalmology department of the University Hospital of Brazzaville (UHB) performs about twenty ocular fundus a week. It is not uncommon to read the ocular fundus to exclude intra cranial hypertension and then perform a lumbar puncture.**
***Objective*: To remember that the intra-cranial hypertension does not mean that there is a risk of cerebral engagement.**
***Design*: Transversal and analytical study.**
***Subjects*: Hospitalised patients'.**
***Results*: A total of 35 applications form were read. All (100%) had as indication of ocular fundus to exclude intra-cranial hypertension for achieving a lumbar puncture.**
***Conclusion*: Confusion between intra-cranial hypertension and the risk of cerebral engagement is still common at the UHB. This has the effect of delaying or not realising the lumbar puncture which is the basis for the diagnosis of meningitis, increasing the morality associated with this serious disease. Do not make a lumbar puncture pending ocular fundus is a medical error that can be fatal for the patient.**

INTRODUCTION

The brain is enclosed in a solid shell, the skull. Inside this box the different brain structures are located in well-defined compartments, but which communicate with each other by openings called foramen (1). The growth of a pathological process inside one of the compartments and / or the gene of cerebrospinal fluid circulation causes movement of a portion of the brain outside its usual compartment to other parts of the skull through one or more foramina (1 - 5). This hernia of brain tissue is called cerebral engagement (CE). The intra cranial hypertension (ICH) is a constant sign of CE. It is reflected by uni or bilateral papilledema (5 - 8). However there are cases of ICH with a proven risk of CE without papilledema. The ophthalmology department of the UHB performs about twenty ocular fundus a week. It is not uncommon to read the ocular fundus to exclude ICH and then perform a lumbar puncture. This work aimed to remember that the ICH does not necessarily mean there is a risk of CE.

MATERIALS AND METHODS

It was a transversal and analytical study, carried out in December 2014 (one month) in the ophthalmology department of the UHB. It had consisted of a reading and analysis of examination application form for ocular fundus from three other departments of the same hospital: Neurology, Infectious diseases and Emergency. All forms were read by the same ophthalmologist. Those application forms had to meet three criteria:

- the examen must be requested by a specialist with his name and his signature on the form,
- the suspected disease should be clearly specified,
- only the forms of patients hospitalized for a disease with neurological signs were retained.

RESULTS

A total of 35 papers were read:

- 22 (62.86%) from Neurology department,

- 10 (28.57%) from Infectious diseases department,
- 2 (8.57%) from Emergency department.

The pathologies suspected were:

- Meningitis in 71.43% of cases (25 applications forms)
- Neuromeningeal hemorrhages in 28.57% of cases (10 applications forms).

In all cases (100%), the indication of the exam was ocular fundus to exclude ICH for performing a lumbar puncture.

DISCUSSION

The CE can cause compression of vital brain structures and quickly lead to death. There are different types of CE (1 - 7). The most common are:

- The cingulate engagement: it is the most common form. The cingulate gyrus is moved against the contralateral hemisphere and is under the false brain. This type mainly concerned the front of the brain. Clinically, there is often a simple stiffness or lateral inclination of the head. Most often it has no serious consequences
- The temporal engagement: unilateral expansive process is very often the cause of this type. The T5 temporal lobe is pushed in the posterior fossa and is pressed against the notch infratentorial. The evolution can be marked by a compression of the homolateral common oculomotor nerve, crushing of the ipsilateral posterior cerebral artery, and a compression of the cerebral peduncle against the free edge of the tentorium. The temporal engagement is serious; it causes a coma with mydriasis decerebrate rigidity, tachycardia, and tachypnea. Its evolution is pejorative because it is likely to cause a brain stem hemorrhage.
- The cerebellar engagement: an expansive process in the posterior fossa is very often the cause of this type. The cerebellar tonsils took to the foramen magnum. This type of CE is serious. This results in a compression of the medulla oblongata with lesions of the respiratory and cardiac centers control.

Depending on the size and location of the expansive process, several types of CE can coexist. Tumors, hematomas and abscesses are the main root causes of CE (3, 5, 7). The papillary edema is sometimes absent in the major forms of CE, as it may be present in its minor forms. The papilledema which is the clinical manifestation of ICH is not always the indicator of a risk of impending CE or already installed (9 - 12). The clinical signs of neurological distress should guide the doctor to ask whether brain imaging (RMI, CT-Scan) to ensure optimal management in appropriate services (Intensive Care, Neurosurgery). The risk of CE after a lumbar puncture is negligible, this has been proven by several studies (3 - 9).

The idiopathic ICH or pseudo tumor cerebri is a perfect illustration in the interpretation of the semiological value of papilledema. Indeed in this pathology the pressure of cerebrospinal fluid is much greater than 250 mm of water. The repeated lumbar puncture is the therapeutic procedure to correct the overproduction of cerebrospinal fluid (10 - 12).

One the first Terson's Syndrome descriptions back to 1900 (13).This syndrome is characterized by an intravitreal hemorrhage associated with a subarachnoid haemorrhage caused by the rupture of a cerebral aneurysm. ICH complicates this symptomatology. Lumbar puncture helps in the diagnosis of subarachnoid hemorrhage, without causing a CE (13 – 16).

The confusion between ICH and the risk of CE is still common at the UHB. Do not perform a lumbar puncture due to papilledema is a serious mistake, sometimes fatal for the patient in case of meningitis.

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