ific Journal O Saber.
ISSN: 2675-9128. Sao Paulo-SP.

Year III, v.3, ed. 1, Jan./Jul. 2023. DOI: 10.51473/ed.al.v3i1.541 | submission: 06/27/2023 | accepted: 06/29/2023 | publication: 07/04/2023

Transfontanelle ultrasound in the evaluation of cerebral hemorrhage in neonates

Cranial ultrasound in the evaluation of cerebral hemorrhage in neonates

Authors: Daiana Lopez Conceição[1], Thaline Mairace Hernandez das Neves[1], João Paulo Maldonado[1], Alan Timoteo Rodrigues Reis[1], Rafael Teodoro Lopes Lalier[1].

[1]Doctor specializing in Radiology and Imaging Diagnosis, Isomed Diagnósticos.

SUMMARY
Transfontanelle ultrasound is a resource used in the neonatal period. The advantage of this method involves its low cost compared to other tests and, as it does not use ionizing radiation, it can be performed repeatedly during the same hospitalization. Brain injuries, such as cerebral hemorrhage, can be identified on ultrasound examination and thus assist in possible management.
Key words: Ultrasound. Bleeding. Neonatal.

ABSTRACT
Cranial ultrasound is a resource used in the neonatal period. The advantage of this method involves low cost compared to other exams and, as it does not use ionizing radiation, it can be performed repeatedly in the same hospitalization. Some brain injuries, such as cerebral hemorrhage, can be identified in the ultrasound examination and thus help in eventual medical care. **Keywords:** Ultrasound. Hemorrhage. Neonatal.

INTRODUCTION:
Intracranial hemorrhage (ICH) in neonates, especially premature ones, represents a considerable cause of mortality and morbidity in this category of patients. Several causes are implicated in this condition, such as vascular pathologies, inflammatory insults, low gestational age and low birth weight, which can lead to future sequelae.[1]
Transfontanelle ultrasound is an imaging resource that evaluates the intracranial constitution and is generally requested when there is a history of prematurity, very low birth weight, convulsive crisis or suspicion of infectious diseases of the central nervous system, which allows information about the brain structures and including indicating the presence of possible hemorrhages.[2,3,4]

METHODOLOGY:
This literature review aims to evaluate and synthesize studies that address the topic of transfontanellar ultrasound assistance in the diagnosis of cerebral hemorrhage. The research was developed with access to SciELO and Virtual Health Library databases and studies were selected between 2005 and 2023.

DISCUSSION:
Transfontanelle ultrasound helps in neonatal care, since ICH may be present in a considerable proportion of newborns and is capable of being identified by this type of examination. Intraventricular and intraparenchymal hemorrhages are more common in premature infants. In full-term babies, cerebral hemorrhages tend to represent atypical findings, but when they occur, they most commonly affect the subdural and subarachnoid spaces.[1,5,6]
The lower the gestational age, the greater the incidence of periventricular and intraventricular hemorrhage, and when bleeding occurs in the brain topography, there may be a greater likelihood of long-term sequelae, such as motor and cognitive deficits.[3]
Transfontanellar ultrasound has a low cost compared to other image acquisition methods, such as computed tomography and magnetic resonance imaging. Furthermore, it is possible to perform the examination at the bedside if it is impossible for the patient to travel to the radiology department, in addition It is a method that does not emit ionizing radiation. This imaging exam provides pertinent information for the clinical case, optimizing management and assisting in patient monitoring. However, its disadvantages include limitations in the characterization of some ischemic parenchymal lesions and it is an operator-dependent exam.[1,6]
The Papile scale grades ICH visualized on neuroimaging; in grade I, hemorrhage is limited to the germinal matrix; in grade II, there is intraventricular hemorrhage, but the ventricles remain normal in size. O

Grade III identifies cases that have intraventricular bleeding progressing with enlargement of the ventricular system and in grade IV there is hemorrhage in the brain parenchyma.[1,7]

Transfontanelle ultrasound, in addition to detecting hemorrhage, can also help in analyzing the presence of hydrocephalus and brain malformations, in addition to being part of the monitoring of previously documented pathological findings.[8]

CONCLUSION:

The early diagnosis of intracranial abnormalities in newborns, such as brain hemorrhages, can be investigated by ultrasonographic examination via the transfontanelle. This method can help to outline therapeutic approaches and outline the prognosis, and thus, assist in patient management in neonatal hospitalization units.

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