Archivos de Medicina de Urgencia de México

Vol. 3, Núm. 3 - Septiembre-Diciembre 2011
pp 121-123

Case report:

Optic nerve ultrasound in optic neuritis

Alejandro Cardozo Ocampo,* Luis Alejandro Urrego Jaramillo **

ABSTRACT

The usefulness of optic nerve ultrasound is currently recognized as a tool that contributes to verifying the presence of intracranial hypertension in the context of trauma patients. Here we report a case of a patient who presents with an increased diameter of the optic nerve sheath with the presence of optic neuritis. A brief discussion of the usefulness of optic nerve ultrasound in trauma follows.

Key words: Optic nerve sheath ultrasound, optic neuritis, optic nerve ultrasound, emergency ultrasound.

RESUMEN

En la actualidad, el ultrasonido del nervio optico es reconocido como una herramienta que contribuye a verificar la presencia de hipertension endocraneana en el contexto de pacientes con trauma. A continuación reportamos un paciente que se presenta con incremento del diámetro de la vaina de nervio óptico de forma unilateral en presencia de neuritis óptica. Una pequeña discusión se realiza sobre la utilidad del ultrasonido de nervio óptico en trauma y otras situaciones de emergencia.

Palabras clave: *Vaina del nervio óptico, ultrasonido de emergencia, neuritis óptica, neurooftalmología.*

INTRODUCTION

Up to now, Critical Care and Emergency Medicine recognize the usefulness of ultrasound of the optic nerve sheath when looking for increased intracranial pressure in trauma patients.

In this case, we illustrate how this simple technique could be considered useful for emergency room patients who may have optic neuritis.

CASE REPORT

A 36 year old woman with a history of multiple sclerosis being treated with interferon B, azathioprine, amantadine and gabapentin; history of two previous episodes of optic neuritis with the last one taking place two years ago.

She was admitted to the emergency room upon experiencing three days of left retroocular pain of moderate intensity, no associated trauma, conjunctival erythema or secretion, no irradiations or apparent triggers, her pain was accompanied by a decline in her visual acuity, motive for seeking help in our emergency services.

* Emergency Department CES Clinic, Neurological.
** Emergency Department Pablo Tobón Uribe Hospital, Neurological.

Institute of Antioquia. Medellín, Colombia

Correspondence:
Alejandro Cardozo Ocampo
E-mail: Galeno026@gmail.com

Received for publication: 23 de agosto de 2011.
Accepted: 26 de septiembre de 2011.

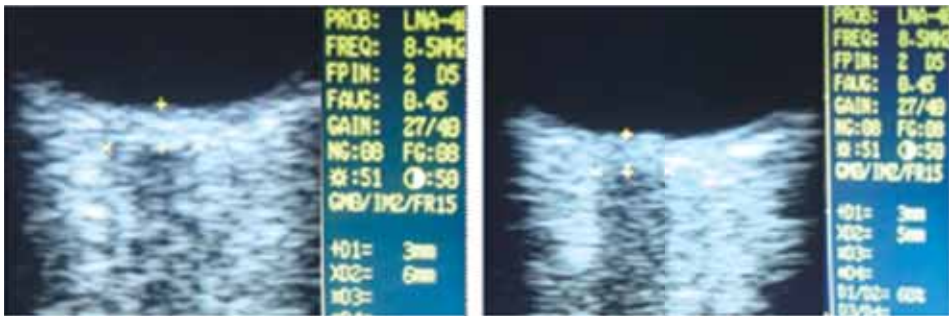


Figure 1. Ultrasound of left and right optic nerves (respectively).

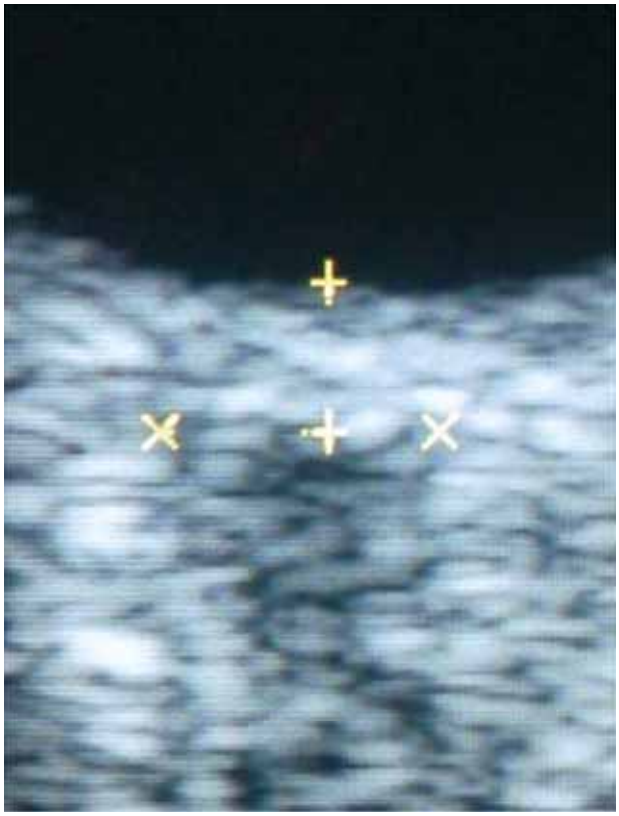
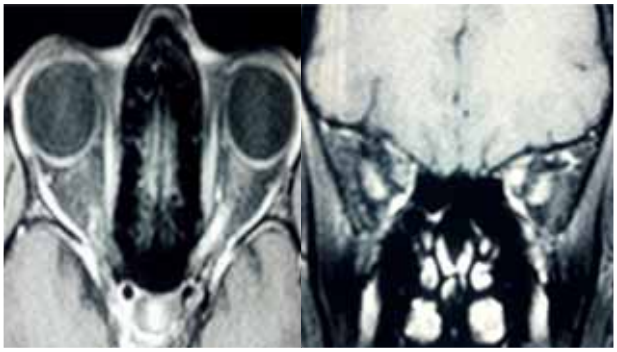


Figure 2. Ultrasound of left optic nerve.



Figures 3 y 4. In this study contrast uptake is evident left optic nerve as noted by the arrow.

No abnormalities were found in her vital signs, neurologic exam was positive for decline in visual acuity: 20/800 in the left eye, 20/40 in the right eye.

She presented with bilateral optic atrophy with a left afferent pupillary defect. There were no other special findings in the rest of the physical exam.

Under the suspicion of optic neuritis relapse, management began with antiparasitics (albendazole), steroids (methylprednisolone 1 g IV per day), complemented by analgesic management; an MRI with/without contrast was requested and was to be performed within a maximum of 8 hours following the request. As part of the physical exam performed before the MRI, emergency medicine specialists assisting the patient conducted an ocular and bilateral optic nerve ultrasound (Well 3100 portable ultrasound scanner with linear probe, 8.5 MHz frequency) showing an asymmetry in the diameters of the optic nerves with a major increase in the left sheath coinciding with the apparently compromised nerve *(Figures 1 and 2)*.

The formal reading of the MRI by the neuroradiologist took place the following day at which time the diagnosis was confirmed *(Figures 3 and 4)*.

In the image on the left side shows diffuse thickening of the ipsilateral optic nerve sheath (6 mm), on the right side can be seen perfectly normal contralateral nerve (5 mm) ultrasound of right optic nerve.

DISCUSSION

Optic nerve ultrasound is a relatively new field of application in emergencies and critical care when it comes to correlating the increase of the diameter of the optic nerve sheath with intracranial hypertension in neurotrauma patients.[1-6]

Some authors have shown that up to 75% of patients with optic neuritis can have dilation of the optic

nerve sheath in MRI measurements, the afore mentioned due to inflammation[7] or local fluid congestion.[8]

Upon demonstrating in this case that the increase in diameter of the optic nerve can be found in pathologies other than trauma through the use of ultrasound, it potentially opens the door for its use in different applications in emergency services such as in pathologies related to neuro-ophthalmic emergencies.

No conflict of interest declared

BIBLIOGRAPHY

1. Kimberly HH, Shah S, Marill K, Noble V. Correlation of optic nerve sheath diameter with direct measurement of intracranial pressure. Acad Emerg Med 2008; 15(2): 201-4.
2. Geeraerts T, Launey Y, Martin L et al. Ultrasonography of the optic nerve sheath may be useful for detecting raised intracranial pressure after severe brain injury. Intensive Care Med 2007; 33: 1704-11.
3. Tayal VS, Neulander M, Norton HJ et al. Emergency department sonographic measurement of optic nerve sheath diameter to detect findings of increased intracranial pressure in adult head injury patients. Ann Emerg Med 2007; 49: 508-14.
4. Karakitsos D, Soldatos T, Gouliamons A et al. Transorbital sonographic monitoring of optic nerve diameter in patients with severe brain injury. Transplant Proc 2006; 38: 3700–6.
5. Blaivias M Theodoro D, Sierzenski PR. Elevated intracranial pressure detected by bedside emergency ultrasonography of the optic nerve sheath. Acad Emerg Med 2003; 10: 376–81.
6. Goel RS, Goyal NK, Dharap SB et al. Utility of optic nerve ultrasonography in head injury. Injury 2008; 39: 519-24.
7. Hickman SJ, Miszkiel KA, Plant GT, Miller DH. The optic nerve sheath on MRI in acute optic neuritis. Neuroradiology 2005; 47(1): 51-5.
8. Killer HE, Mironov A, Flammer J. Optic neuritis with marked distension of the optic nerve sheath due to local fluid congestion. Br J Ophthalmol 2003; 87: 249.