Case Report

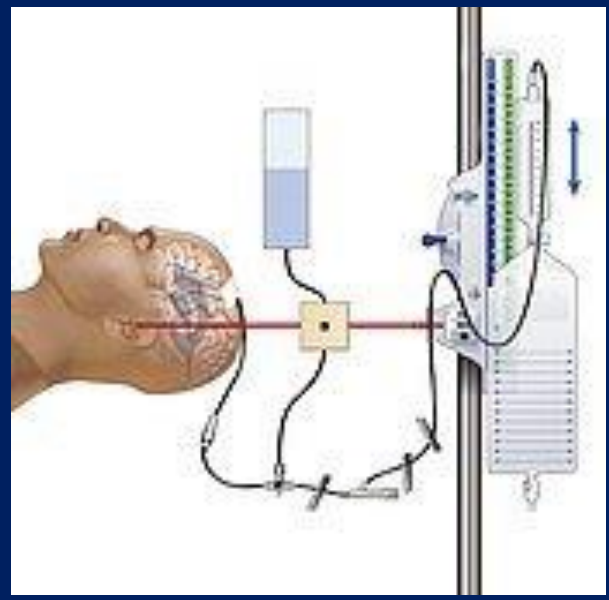
SIÊU ÂM MẮT
BỆNH NHÂN TĂNG ÁP NỘI SỌ

BS Lê Văn Tài
Khoa Siêu Âm MEDIC

TỔNG QUAN

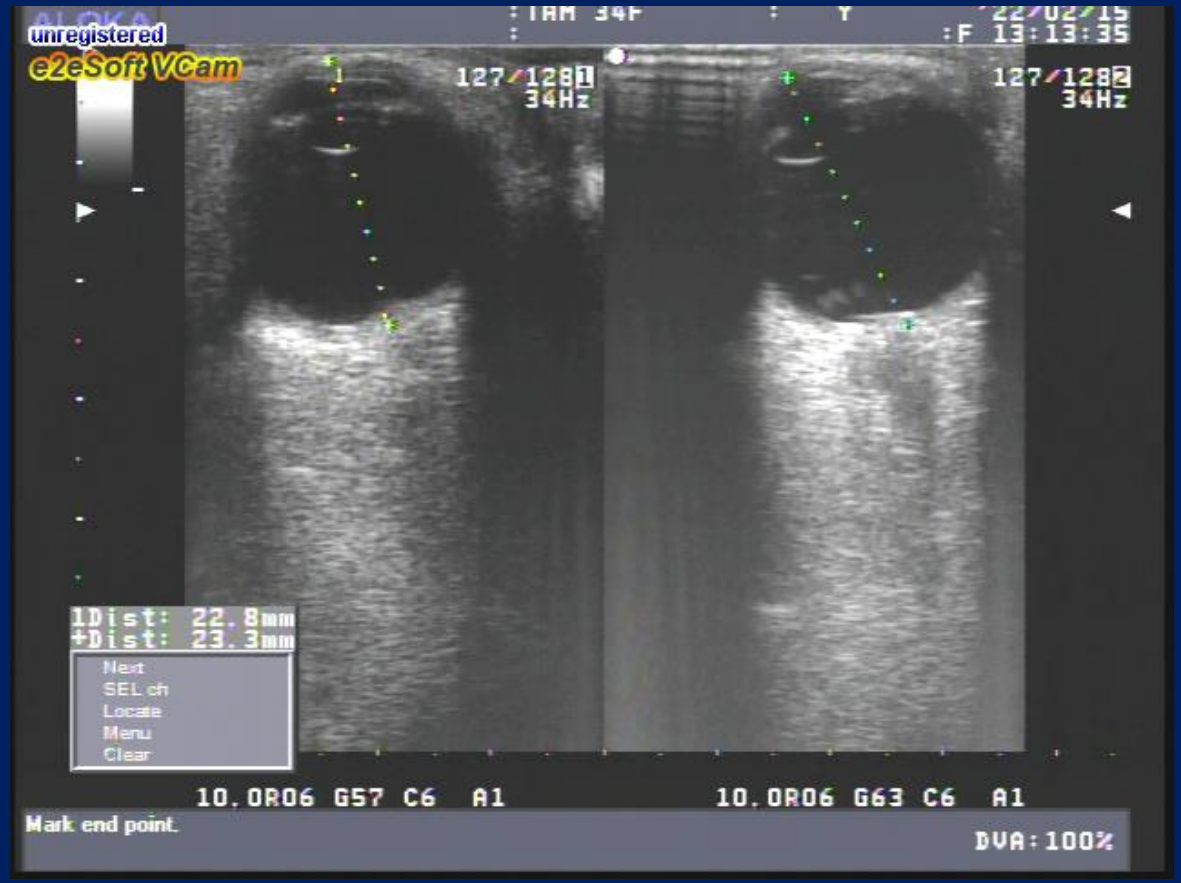
- Đau đầu
- Nôn ói
- Song thị
- Soi đáy mắt: Phù gai thị
- CT, MRI: khối choáng chỗ, dãn não thất …

- Đặt catheter vào nhu mô não
- Chọc dò cột sống thắt lưng



BỆNH ÁN

- **Hành chánh:**
- Họ & tên: [redacted] nữ 34 tuổi
- Địa chỉ: Thôn Thanh Quang, Xã Thanh Tân, Huyên Như Thanh, Tỉnh Thanh Hóa. Điện thoại: 0335804925
- **Lâm sàng**: Đau đầu 3 tháng, lúc đầu có ói, khám BV Vạn Phúc, MRI não bình thường. Khám BVCR chẩn đoán đau đầu vận mạch, uống thuốc không giảm, nhìn đôi → khám MEDIC.
- Khám CK mắt: mắt (P), (T): thị lực bình thường, không kính (10/10)
- HA: 123/85 mmHg, Nhịp thở: 17 lần/phút, Nhiệt độ: 37ºC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34Hz
127/128 2
34Hz
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+Dist: 23.3mm
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Menu
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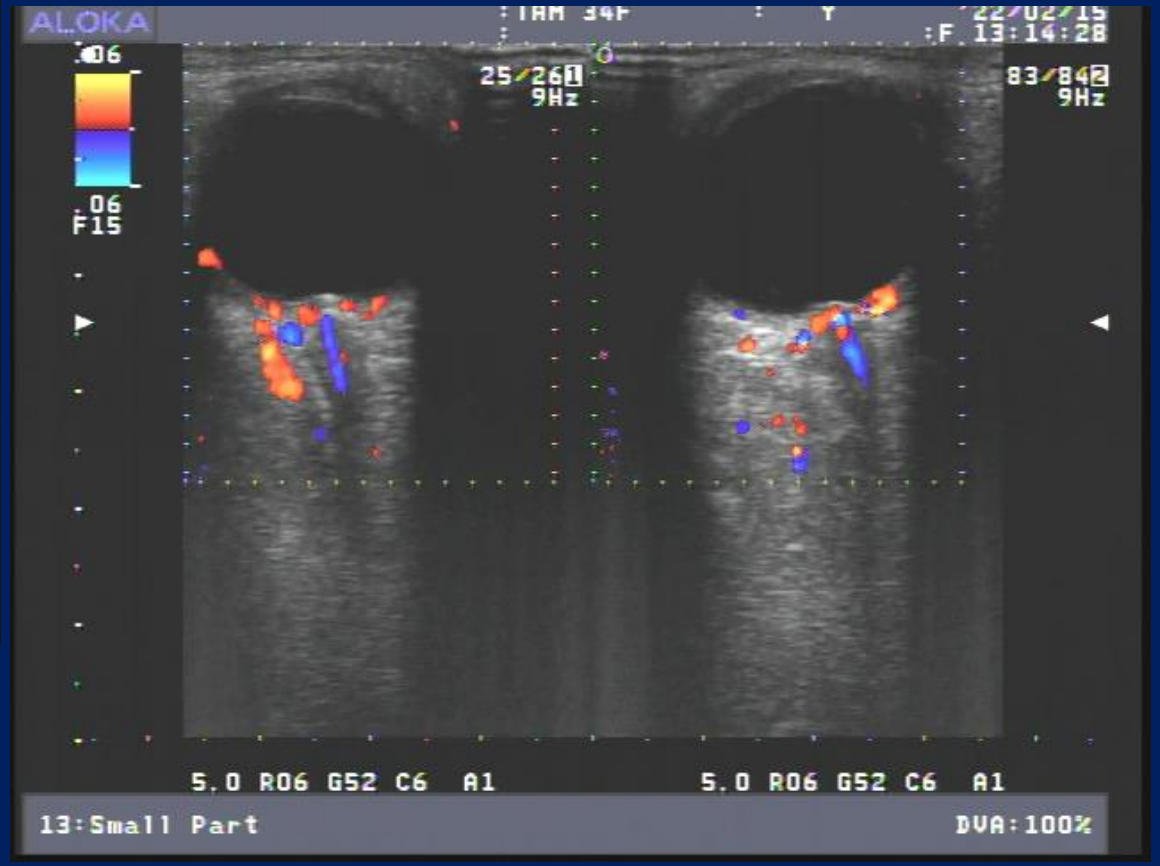
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F15
25/26 1
9Hz
83/84 2
9Hz
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5.0 R06 G52 C6 A1
13:Small Part
DVA:100%

unregistered
e2eSoft VCam
:F 13:11:30
119/128 1
34Hz
116/128 2
34Hz
1Dist: 3.1mm
2Dist: 7.2mm
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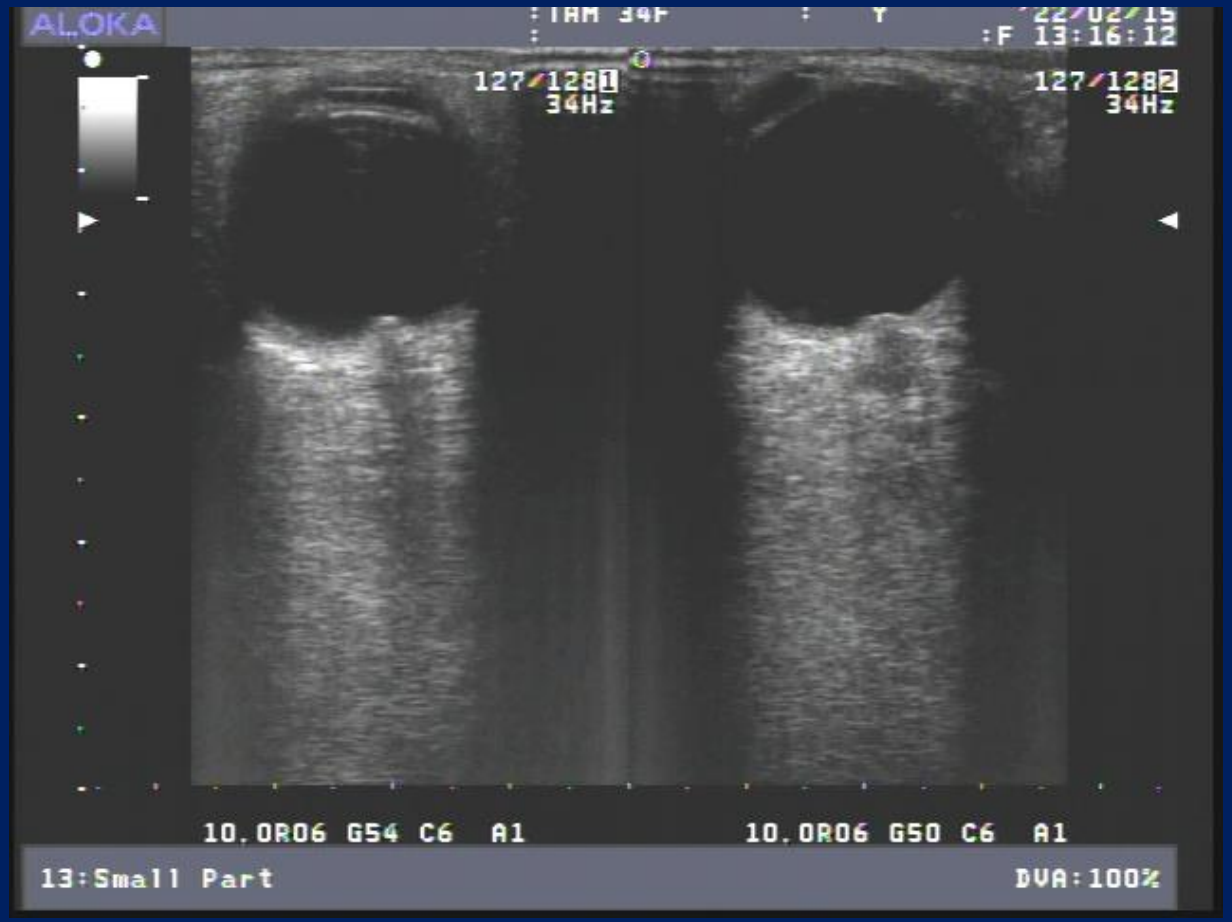
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34Hz
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13:Small Part
DVA:100%

CÔNG TY TNHH Y TẾ HÒA HẢO - PHÒNG KHÁM ĐA KHOA
(Tên cũ: TRUNG TÂM CHẨN ĐOÁN Y KHOA - MEDIC)
254 Hòa Hảo, P.4, Q.10, TP. Hồ Chí Minh
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Hoặc app: Medic Hoa Hao

Qr code kết quả chứa bệnh án của quý khách. Medic không chịu trách nhiệm nếu quý khách cung cấp cho người khác.

QRCode kết quả

BỆNH ÁN

KHOA MẮT - PHÒNG: 4

6674037

Họ tên: [redacted] Năm sinh: **1988 - Nữ**

Địa chỉ: **Thôn Thanh Quang, X. Thanh Tân, Huyện Như Thanh, Tỉnh Thanh Hóa** ĐT: **0335804925**

Nghề nghiệp: **công nhân** Số thẻ BHYT:

Huyết áp: **123/85** Mạch: **93** Cao: **154** cm; Nặng: **54** kg; Nhiệt độ: **37**℃

Lý do đi khám: HAI MẮT:SONG THỊ

Lâm sàng: Không kính Có Kính
MP: 10/10 MP: /10
MT:10 /10 MT: /10
NHỊP THỞ:17 LẦN/PHÚT
ĐÁY MẮT:PHÙ GAI+XUẤT HUYẾT HAI MẮT

CHỈ ĐỊNH:

- **CẬN LÂM SÀNG**:
+ Siêu âm Mắt Màu: THẦN KINH THỊ GIÁC 2 MẮT ĐOẠN HỐC MẮT TO --> NGHĨ DO TĂNG ÁP NỘI SỌ.
+ Chụp Hình Màu Đáy Mắt (FO): FO: MPT:XUẤT HUYẾT + PHÙ GAI .
+ Khám CK Mắt: HAI MẮT:PHÙ GAI DO TĂNG ÁP LỰC NỘI SỌ/U TUYẾN TÙNG

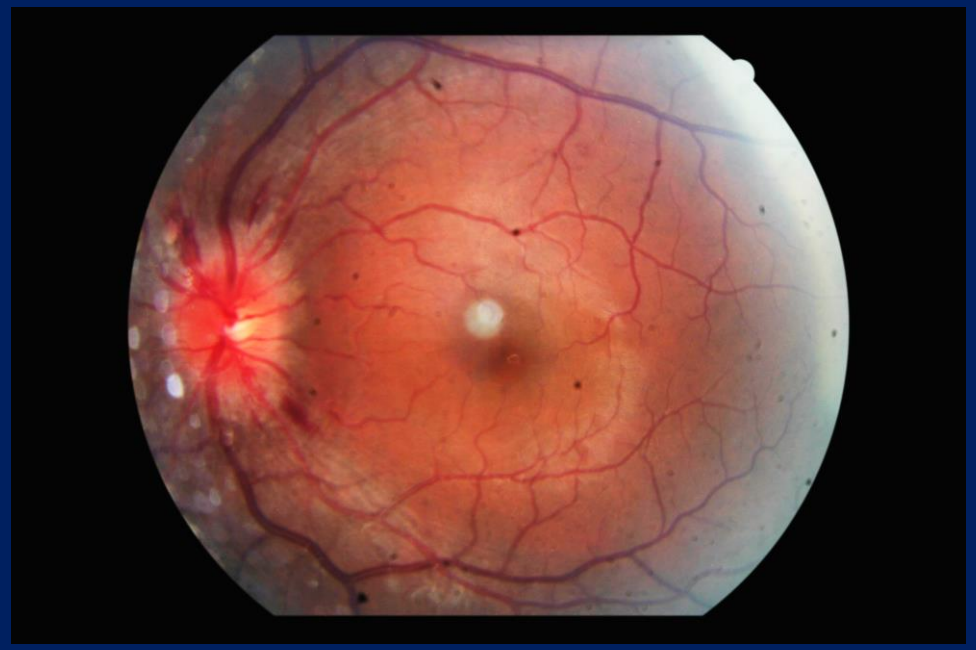
Chẩn đoán: HAI MẮT:PHÙ GAI DO TĂNG ÁP LỰC NỘI SỌ/U TUYẾN TÙNG

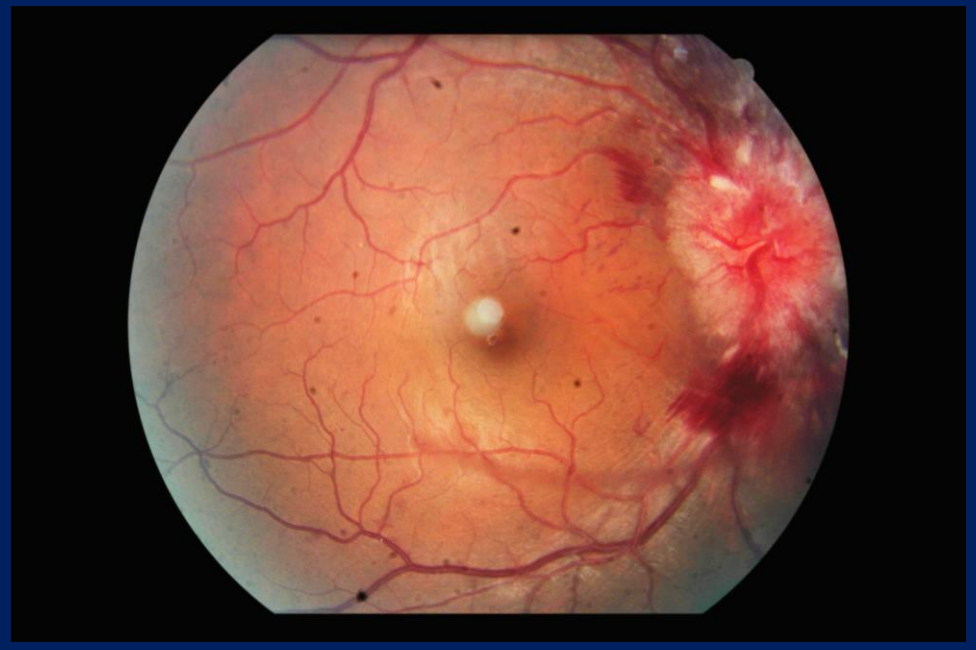
LỜI DẶN BS
KHÔNG THUỐC

Tp.HCM, ngày 15/02/2022 - 13:12
Bác sĩ điều trị

Bs. Nguyễn Lan Đình

**** PKĐK Hoà Hảo không có phòng khám bên ngoài, vui lòng vào trong đăng ký khám.***
**** Tái khám xin mang theo đơn thuốc này, phim và đầy đủ hồ sơ cũ.***





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Hoặc app: Medic Hoa Hao

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6674037

QRCode kết quả

Khoa: **CHUYÊN KHOA MẮT**
Máy: **Canon EOS 30D**

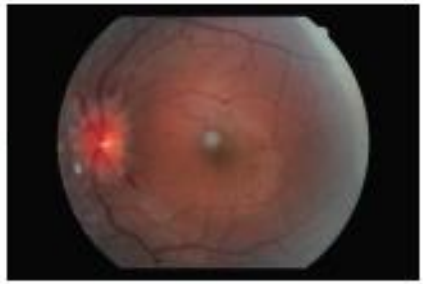
KẾT QUẢ

ID : **6674037** Ngày ĐK: 15/02/2022
Họ và tên : [redacted] **34** tuổi **Nữ**
Địa chỉ : Ấp Đồng Sổ, X. Lai Uyên, H. Bàu Bàng, T. Bình Dương – 0335804925
Lâm sàng : KT
Bác sĩ chỉ định : BS. NGUYỄN LAN ĐÌNH BV chỉ định : MEDIC

VÙNG KHẢO SÁT : CHỤP HÌNH MÀU ĐÁY MẮT (FO)

MẮT PHẢI

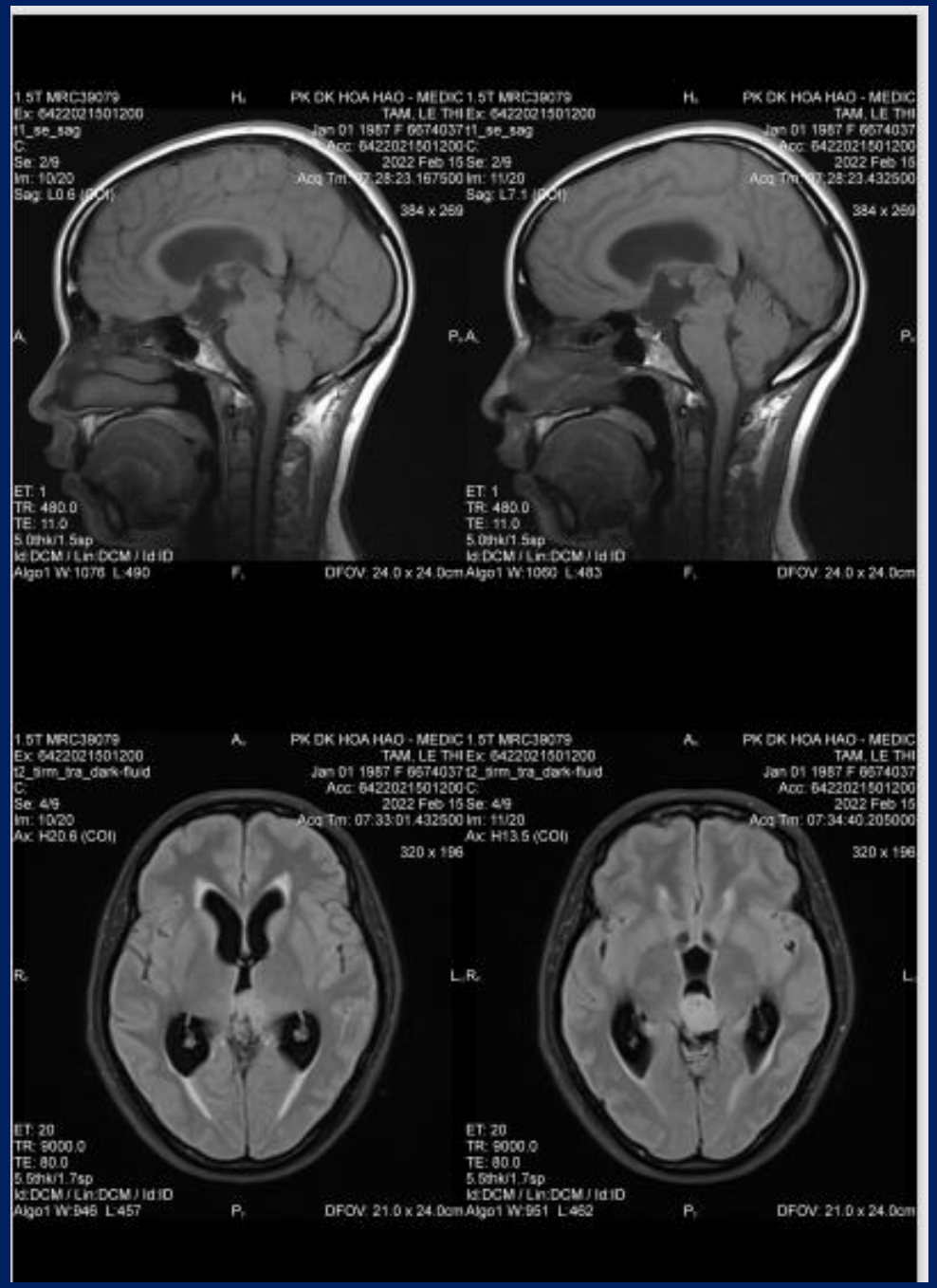
MẮT TRÁI

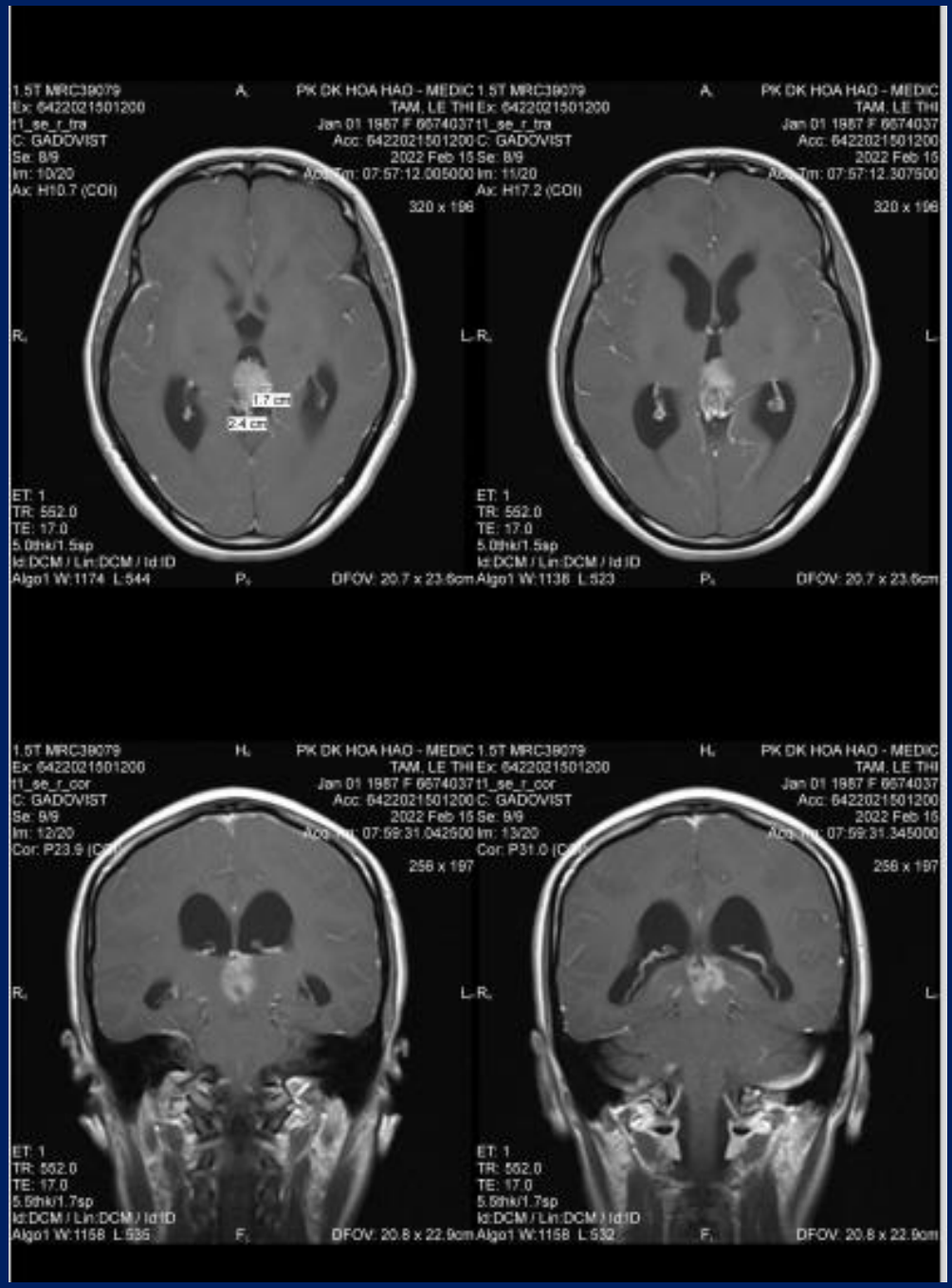


KẾT LUẬN : **FO: MPT:XUẤT HUYẾT + PHÙ GAI .**

Tp. Hồ Chí Minh, ngày 15/02/2022
(Bác sĩ đã ký)

Bs. Nguyễn Lan Đình


1.5T MRC39079
PK DK HOA HAO - MEDIC 1.5T MRC39079
TAM, LE THI
t1_se_sag
t2_srm_tra_dark-fluid
DFOV: 24.0 x 24.0cm
DFOV: 21.0 x 24.0cm


1.5T MRC39079
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t1_se_r_cor
C: GADOVIST
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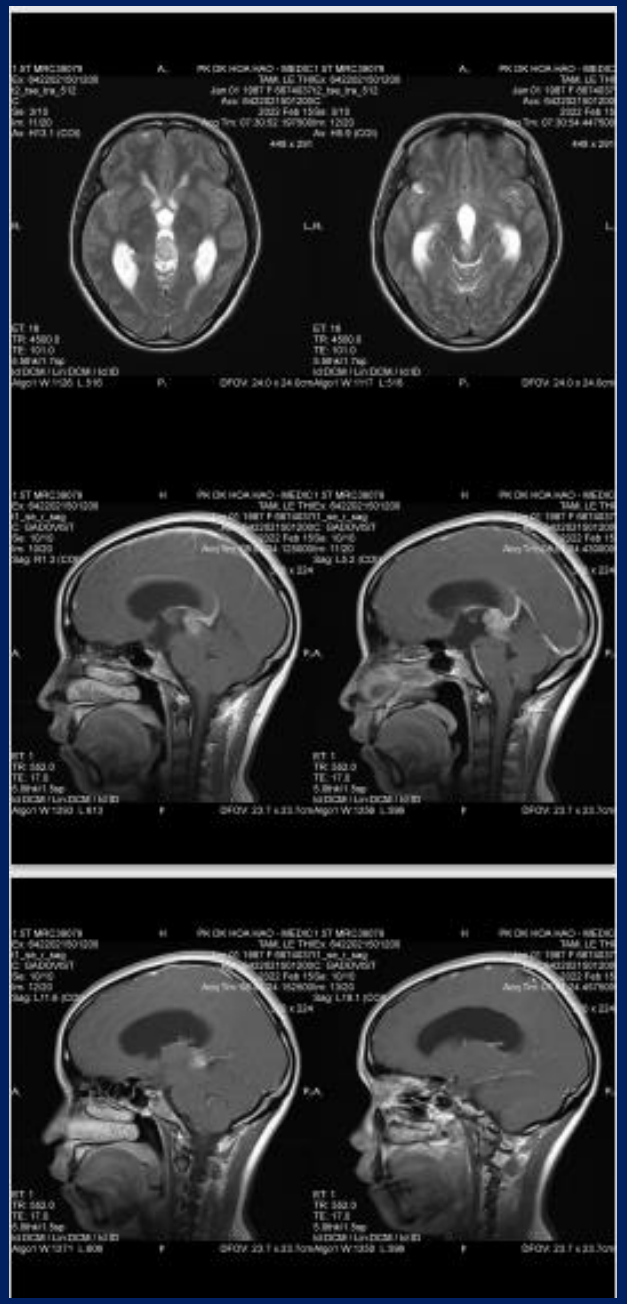
DFOV: 20.8 x 22.9cm



CÔNG TY TNHH Y TẾ HÒA HẢO - PHÒNG KHÁM ĐA KHOA
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Qr code kết quả chứa bệnh án của quý khách. Medic không chịu trách nhiệm nếu quý khách cung cấp cho người khác.

QRCode kết quả

6674037

MEDIC MRI REPORT

LÊ THỊ TÂM 1983F

STT	: **220215012**	**Ngày ĐK : 15/02/2022 06:38**
Bệnh nhân	: [redacted]	**Tuổi : 34 Nữ**
Địa chỉ	: Thôn Thanh Quang, X. Thanh Tân, Huyện Như Thanh, Tỉnh Thanh Hóa - **ĐT : 0335804925**	
Bác sĩ chỉ định	: **BS. CKII. NGUYỄN THỊ ÁNH HỒNG**	
Bệnh viện	: **MEDIC**	**Khoa : PK**
LÝ DO KHÁM	: **ĐAU ĐẦU**	
Máy	: **SIEMEN ESSENZA 2**	
Vùng	: **MRI SỌ NÃO**	**Không, sau đó tiêm tương phản**

Kết quả : MRI não bệnh nhân được khảo sát máy 1.5T, qua các mặt cắt theo những chuỗi xung: Sagittal T1WI; Axial T2WI, Axial T2 FLAIR, Axial DWI. Không và có tiêm thuốc tương phản.

XOANG :
- Các xoang hàm, sàng, trán, bướm hai bên sáng đều
- Vòm hầu và các khoang cạnh hầu hai bên trống.
- Các tế bào chũm hai bên sáng đều.

HỐ SAU:
- Không phát hiện bất thường tín hiệu nhu mô tiểu não, thân não trên T1WI, T2WI, T2FlAIR.
- Não thất 4 ở giữa, không giãn. Các bể dịch não tủy quanh thân não bình thường.

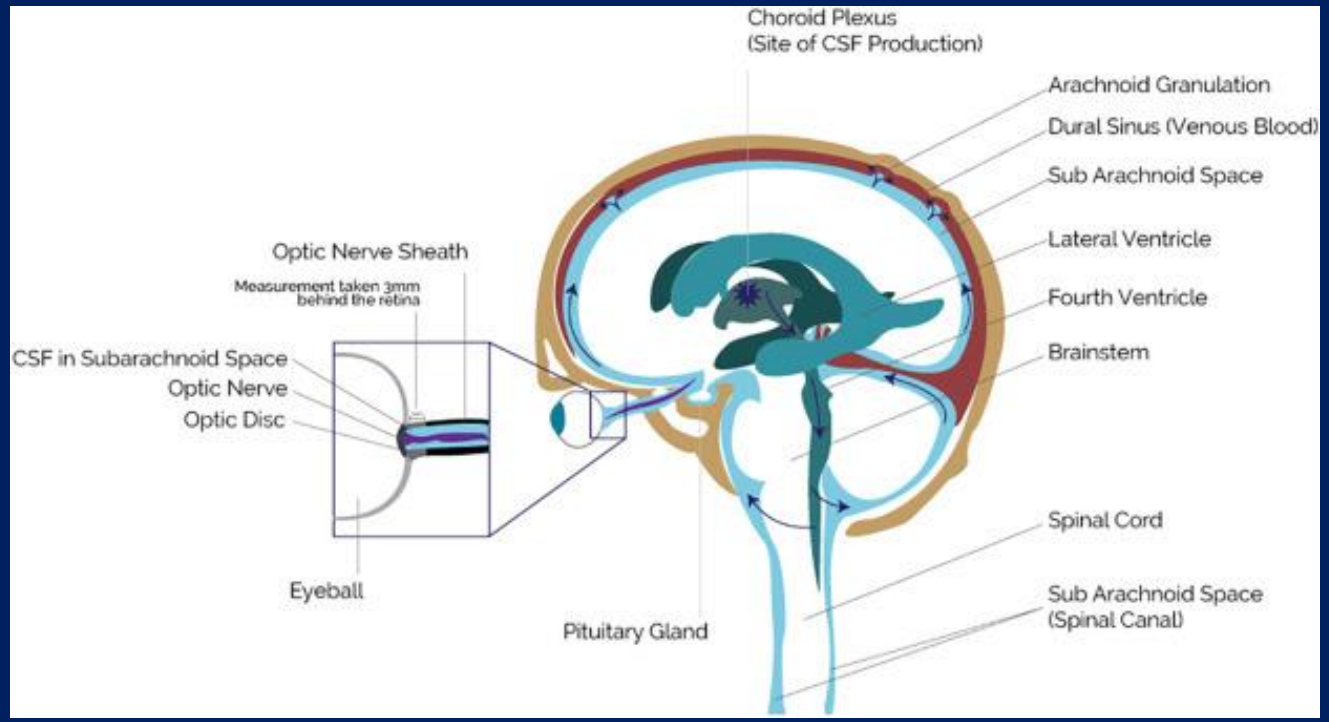
TẦNG TRÊN LỀU :
- Khối choán chỗ vùng tuyến tùng, kích thước 25 x 15 x 15mm, giảm tín hiệu trên T1WI, tăng tín hiệu trên T2WI, T2 Flair, có bắt thuốc tương phản mạnh.
- Giãn não thất ba và bên hai bên.
- Cấu trúc đường giữa không lệch.
- Rãnh vỏ não bình thường.

*** KẾT LUẬN:
- Khối choán chỗ vùng tuyến tùng. Có khả năng Germinoma
- Giãn não thất ba và bên hai bên

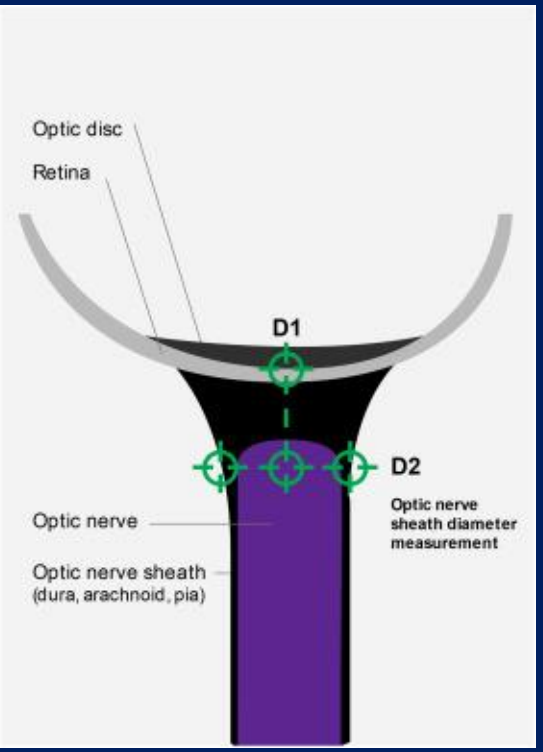
Tp. Hồ Chí Minh, ngày 15/02/2022 08:34
(Bác sĩ đã ký)

Bs. CKII. Nguyễn Thị Ánh Hồng

BÀN LUẬN


Choroid Plexus
(Site of CSF Production)
Arachnoid Granulation
Dural Sinus (Venous Blood)
Sub Arachnoid Space
Lateral Ventricle
Fourth Ventricle
Brainstem
Optic Nerve Sheath
Measurement taken 3mm behind the retina
CSF in Subarachnoid Space
Optic Nerve
Optic Disc
Spinal Cord
Eyeball
Sub Arachnoid Space
(Spinal Canal)
Pituitary Gland

D 1
3 mm
D 2
5.982 mm
0.5 cm
D 1
D 2
3.9 cm


Optic disc
Retina
D1
D2
Optic nerve sheath diameter measurement
Optic nerve
Optic nerve sheath
(dura, arachnoid, pia)

VIA MEDICA

REVIEW ARTICLES

Disaster and Emergency Medicine Journal
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ISSN 2451–4691

ULTRASOUND ASSESSMENT OF THE OPTIC NERVE SHEATH AS AN INDIRECT METHOD OF DIAGNOSIS OF INCREASED INTRACRANIAL PRESSURE

Kurt Ruetzler[1], Maciej Dudek[2], Dominika Dunder[2], Lukasz Szarpak[2]

[1]Department of Outcomes Research, Anesthesiology Institute, Cleveland Clinic, Cleveland, USA; Department of General Anesthesiology, Anesthesiology Institute, Cleveland Clinic, Cleveland, USA
[2]Lazarski University, Warsaw, Poland

ABSTRACT

Ultrasonography is a diagnostic technique that has been used clinically for 30 years. Due to the increased availability of ultrasound machines as well as the reduction of their size and making them more mobile, ultrasound has found its place in early diagnosis in emergency medicine settings. One of the important, however, an underestimated ultrasound examination is the measurement of the thickness of the optic nerve sheath. The optic nerve is the second cranial nerve, meaning the same sheath surrounds it as the brain. At the moment of intracranial pressure increase, cerebrospinal fluid flows into the subarachnoid space causing an increase in intracranial pressure and thus increasing the diameter of the optic nerve sheath. therefore, ONSD imaging is a quick non-invasive test aimed at detecting and monitoring changes in intracranial pressure. Optic nerve sheath ultrasound is a simple, safe and inexpensive bedside diagnostic test. Ophthalmic ultrasound usually uses the frequency between 5 and 10.5 MHz to evaluate the eye and the orbit.

KEY WORDS: ultrasound test; emergency medicine; intracranial pressure; optic nerve

Disaster Emerg Med J 2019; 4(1): 14–17

FIGURE 3. The method of applying the ultrasound head: (A) Axial View; (B) Sagittal View

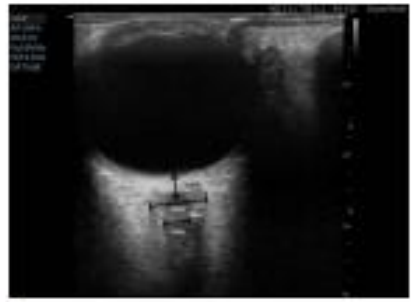

FIGURE 1. Optic nerve (OND) and optic nerve sheath (ONSD)

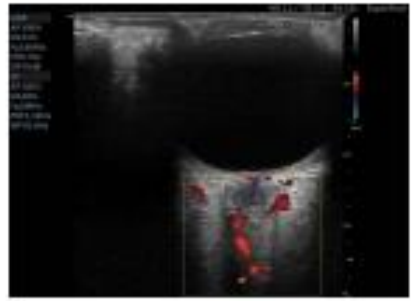

FIGURE 2. Central retinal artery

Measure the diameter of the optic nerve using the "3 X 5" principle meaning that the calculation is made 3 mm from the posterior wall of the orbital globe, where 5 mm means an impassable limit of the correct width of the optic nerve with the capsule (Fig. 1). The correct diameter of the optic nerve for an adult does not exceed 5 mm, for a child 4.5 mm, and for infants 4 mm.

British Journal of
Ophthalmology

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Article Text

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Review

Ultrasonic measurement of optic nerve sheath diameter: a non-invasive surrogate approach for dynamic, real-time evaluation of intracranial pressure

Li-min Chen , Li-juan Wang , Yang Hu , Xiao-han Jiang , Yu-zhi Wang , Ying-qi Xing

Correspondence to Ying-qi Xing, The First Hospital of Jilin University, Changchun 130021, China; xingyq2009@sina.com

Abstract

The current study aimed to identify whether ultrasonographic measurements of optic nerve sheath diameter (ONSD) could dynamically and sensitively evaluate real-time intracranial pressure (ICP). ONSD measurements were performed approximately 5 min prior to and after a lumbar puncture (LP). A total of 84 patients (mean±SD age, 43.5±14.7 years; 41 (49%) men; 18 patients with elevated ICP) were included in the study. The Spearman correlation coefficients between the two observers were 0.779 and 0.703 in the transverse section and 0.751 and 0.788 in the vertical section for the left and right eyes, respectively. The median (IQR) change in ONSD (ΔONSD) and change in ICP (ΔICP) were 0.11 (0.05–0.21) mm and 30 (20–40) mmH_2O, respectively, for all participants. With a reduction in cerebrospinal fluid pressure, 80 subjects (95%) showed an immediate drop in ONSD; the median (IQR) decreased from 4.13 (4.02–4.38) mm to 4.02 (3.90–4.23) mm ($p<0.001$). Significant correlations were found between ONSD and ICP before LPs ($r=0.482$, $p<0.01$) and between ΔONSD and ΔICP ($r=0.451$, $p<0.01$). Ultrasonic measurement of ONSD can reflect the relative real-time changes in ICP.

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SCIENTIFIC REPORTS

OPEN

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Accepted: 8 November 2017
Published online: 21 November 2017

Ultrasonographic measurement of the optic nerve sheath diameter and its association with eyeball transverse diameter in 585 healthy volunteers

Dong Hwan Kim[1], Jin-Sun Jun[2] & Ryul Kim[3]

The optic nerve sheath diameter (ONSD) is considered as an indirect marker for intracranial pressure (ICP). However, the optimal cut-off value for an abnormal ONSD indicating elevated ICP and its associated factors have been unclear. Thus, we investigated normative values for the ONSD using ultrasonography and investigate the potential factors affecting it. We prospectively recruited healthy volunteers between September 2016 and March 2017. A total of 585 individuals were included, in which the mean ONSD was 4.11 mm [95% confidence interval (CI), 4.09–4.14 mm]. Although ONSD was correlated with sex ($p = 0.015$), height ($p = 0.003$), and eyeball transverse diameter (ETD) ($p < 0.001$) in simple linear regression analyses, multiple linear regression analysis revealed that only ETD was independently associated with ONSD ($p < 0.001$). Accordingly, we further established a normative value for the ONSD/ETD ratio and its associated factors. The mean ONSD/ETD ratio was 0.18 (95% CI, 0.18–0.18), but the ONSD/ETD ratio was not correlated with sex, height, weight, body mass index, and head circumference. Our findings suggest that the ONSD had a strong correlation with ETD, and ONSD/ETD ratio might provide more reliable data than ONSD itself as a marker of ICP.

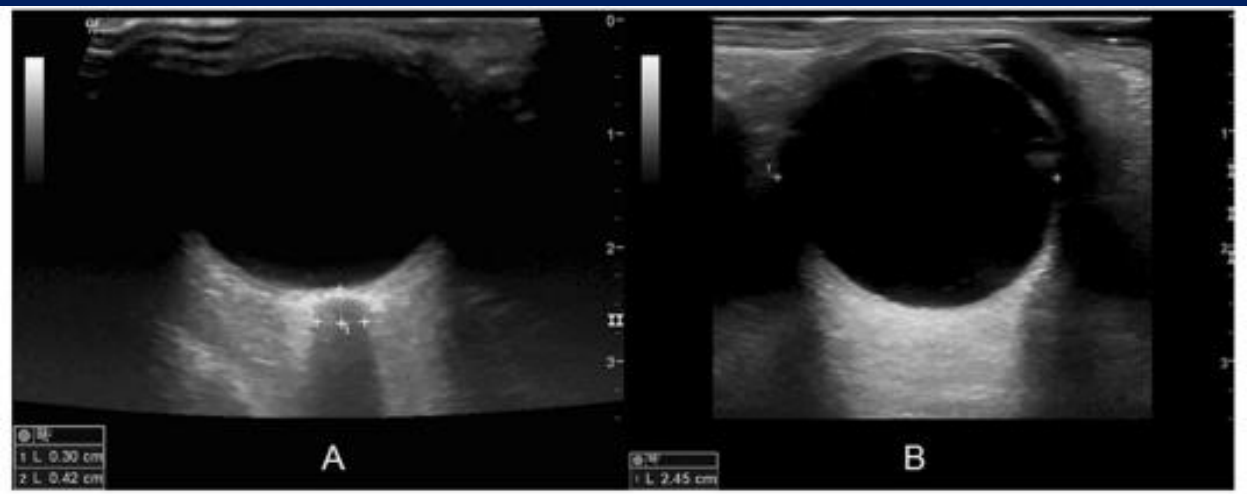

Figure 1. A sample ultrasonographic image for estimation of the ONSD (**A**) and ETD (**B**). (**A**) ONSD (measurement "2") is measured 3 mm behind the globe using an electronic caliper along the axis (measurement "1"). *Abbreviations*: ONSD, optic nerve sheath diameter; ETD, eyeball transverse diameter.

	Mean ± SD (95% CI)	Median (IQR)	Minimum	Maximum
ONSD				
Right (mm)	4.12 ± 0.37 (4.09–4.15)	4.10 (3.80–4.40)	3.10	5.20
Left (mm)	4.11 ± 0.37 (4.08–4.14)	4.10 (3.80–4.30)	3.20	5.40
Overall (mm)	4.11 ± 0.35 (4.09–4.14)	4.10 (3.85–4.35)	3.30	5.20
ETD				
Right (mm)	22.95 ± 0.95 (22.87–23.02)	22.90 (22.30–23.50)	20.90	25.60
Left (mm)	22.87 ± 0.95 (22.79–22.94)	22.80 (22.20–23.40)	20.70	25.90
Overall (mm)	22.91 ± 0.93 (22.83–22.98)	22.85 (22.25–23.45)	20.90	25.70
ONSD/ETD ratio				
Right	0.18 ± 0.02 (0.18)	0.18 (0.17–0.19)	0.13	0.23
Left	0.18 ± 0.02 (0.18)	0.18 (0.17–0.19)	0.14	0.24
Overall	0.18 ± 0.02 (0.18)	0.18 (0.17–0.19)	0.14	0.23

Table 1. Basic descriptive statistics for ONSD, ETD, and the ONSD/ETD ratio measured using ultrasonography for healthy Korean adults. The overall ONSD value is the mean of the values for the left and right eyes. ONSD, optic nerve sheath diameter; ETD, eyeball transverse diameter; SD, standard deviation; CI, confidence interval; IQR, interquartile range.

BIOMEDICAL JOURNAL 43 (2020) 231–239

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Review Article

Point-of-care ultrasound of optic nerve sheath diameter to detect intracranial pressure in neurocritically ill children - A narrative review

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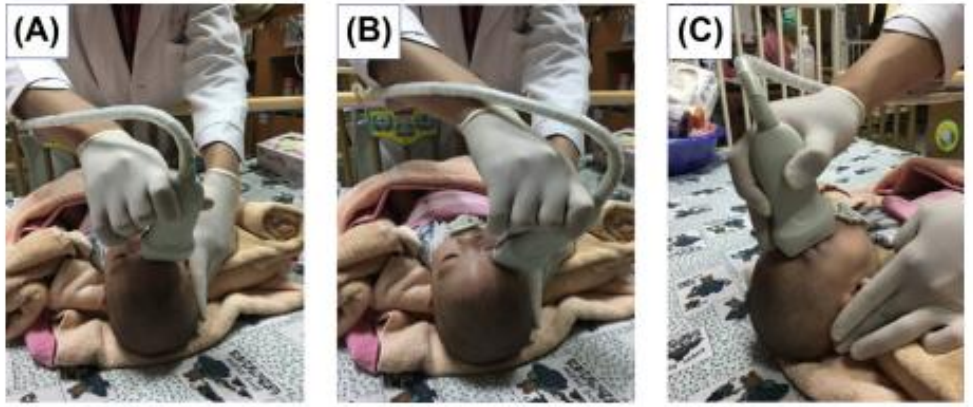
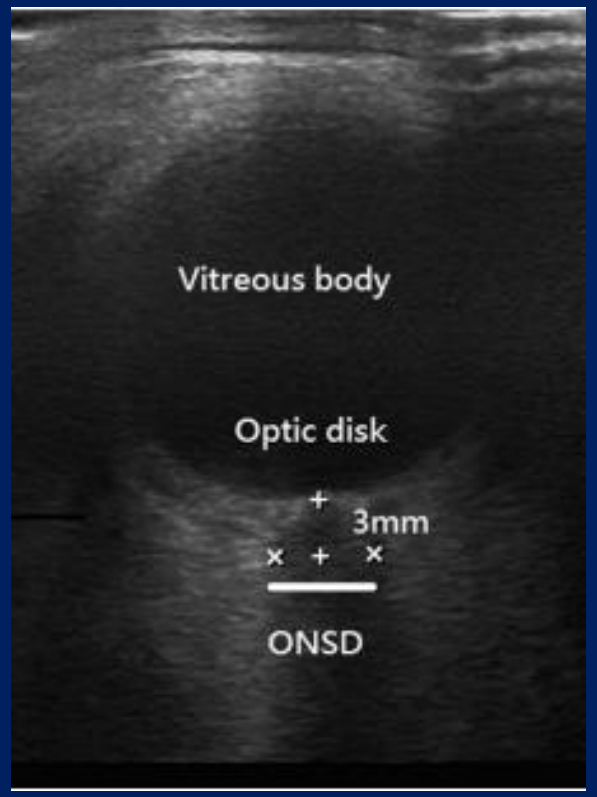


Fig. 1 Technique for measuring sonographic optic nerve sheath diameter using an (A) anterior axis, (B) lateral axis, and (C) vertical axis transbulbar approach.



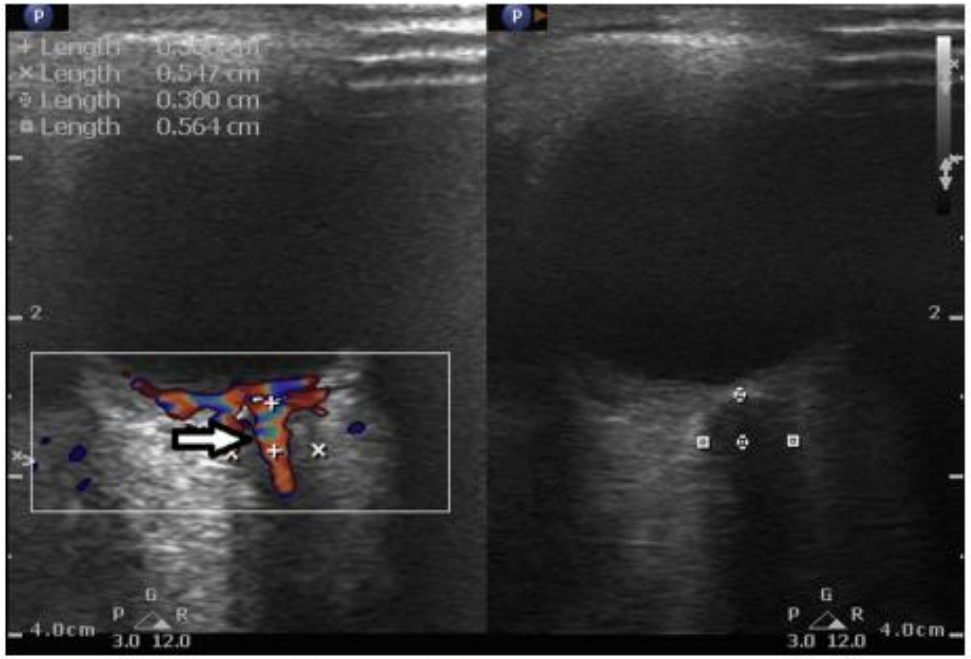


Fig. 4 Optic nerve in children can be tortuous. Since the central retinal artery (white arrow) passes centrally through the optic nerve, color Doppler will help the examiner to correctly identify the optic nerve and avoid errors in interpreting the ONSD.

pressure.

	Author and year	Study design	Study population and clinical setting	Ultrasound probe	Reference standard	Cut-off value of ONSD (mm)	Sensitivity and specificity of US-ONSD[a]
1	Helmke et al., 1996 [37]	Prospective observational study	24 patients who were suspected of having an increased ICP/ICU	7.5 MHz linear probe	NE, CT, ICP monitoring	ICP ≥ 20 mmHg: 5.3 mm	NM
2	Newman et al., 2002 [15]	Retrospectively study	23 children with shunted hydrocephalus/NM	7 MHz linear probe	NE, CT and Shunt revised	>1 year old: 4.5 mm ≤1 year old: 4.0 mm	NM
3	Malayeri et al., 2005 [38]	Case-control study	156 patients who were suspected of having an increased ICP/non-ICU+ICU	7.5 MHz linear probe	CT, brain sonography, funduscopy	**ICP group:** 5.6 ± 0.6 mm **Control group:** 3.3 ± 0.6 mm	NM
4	Körber et al., 2005 [25]	Retrospectively study	483 patients who were suspected of having an increased ICP/NM	5 MHz linear probe	NE, EEG, CT and/or MRI	4.5 mm	NM
5	Tsung et al., 2005 [39]	Case series	3 children with head trauma/ED	7 MHz linear probe	NE, CT and Shunt revised	Age >15 years: 5.0 mm Age 1–15 years: 4.5 mm ≤1 year old: 4.0 mm	NM
6	Beare et al., 2008 [40]	Prospective observational study	14 patients who were suspected of having an increased ICP/NM	7 MHz linear probe	NE, CT	4.2	Sensitivity: 100% Specificity: 86%
7	Le et al., 2009 [41]	Prospective observational study	64 patients who were suspected of having an increased ICP/ED+ICU	8 to 5 MHz linear probe	CT, ICP monitoring, LP	>1 year old: 4.5 mm ≤1 year old: 4.0 mm	Sensitivity: 83% Specificity: 38%
8	McAuley et al., 2009 [42]	Retrospectively study	160 children with shunted hydrocephalus/NM	8–13 MHz linear probe	Clinical history	>1 year old: 4.5 mm ≤1 year old: 4.0 mm	NM
9	Driessen et al., 2011 [43]	Prospective observational study	128 patients with syndromic craniosynostosis/NM	8.5 MHz linear probe	Funduscopy	>4 years old: 4.5 mm ≤4 years:> 4.0 mm	Sensitivity: 11% Specificity: 97%
10	Hall et al., 2013 [17]	Prospective observational study	39 patients who were suspected of having ventriculoperitoneal shunt failure/ED	14 MHz linear probe	Neurosurgical decision to revise the shunt within 2 weeks	5.0 mm	Sensitivity: 61.1% Specificity: 22.2%
11	Marchese et al., 2015 [18]	Case series	4 children who were suspected of having an increased ICP/ED	14 MHz linear probe	Invasive ICP Monitoring, LP and Funduscopy	Age >15 years: 5.0 mm Age 1–15 years: 4.5 mm ≤1 year old: 4.0 mm	NM
12	Padayachy et al., 2016 [44]	Prospective observational study	174 children who required invasive ICP monitoring/ ICU+OR	7–15 MHz linear probe	Invasive ICP Monitoring	**ICP ≥ 15 mmHg:** 5.49 mm **ICP ≥ 20 mmHg:** 5.75 mm	**ICP ≥ 15 mmHg:** Sensitivity: 93.7% Specificity: 74.4% **ICP ≥ 20 mmHg:** Sensitivity: 88.9% Specificity: 84.2%

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Review article

The role of optic nerve sheath diameter ultrasound in brain infection

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Table 1
Summary of studies with ONSD cut-off for detecting raised ICP in brain infection.

Study	Patient group	No. of patients	Reference for raised ICP	ONSD cut off [mm]	Sensitivity [%]	Specificity [%]	Country
Nabeta, 2014 [45]	Meningitis, 81% cryptococcal. 4% TB meningitis, 15% other/ unknown. Adult population.	98	CSF pressure by lumbar puncture	5.0	85	59	Uganda
Shirodkar, 2014 [51]	Mixed infective and non-infective pathology. Adult population.	101	CT/MRI	4.6 [F] 4.8 [M]	84.6 [F] 97.4 [M]	100 [F] 100 [M]	India
Rehman, 2018 [52]	Mixed infective and non-infective pathology. Paediatric population.	48	CT/MRI	4–5.4 [<1y / >10y]	100	60–67	Pakistan
Gupta, 2019 [53]	Mixed infective and non-infective pathology. Adult population.	100	CSF pressure by lumbar puncture	6.3	77	92	India
du Toit, 2015 [54]	Mixed meningitis. Adult population.	73	CSF pressure by lumbar puncture	4.8	50	90	South Africa

CSF: Cerebrospinal fluid. CT: Computed tomography. F: Female gender. ICP: Intracranial pressure. M: Male gender. MRI: Magnetic resonance imaging. ONSD: Optic nerve sheath diameter ultrasound. TB: Tuberculosis.

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Transorbital Sonography in Acute Optic Neuritis: A Case-Control Study

P. Lochner, R. Cantello, F. Brigo, L. Coppo, R. Nardone, F. Tezzon, O. Raymkulova, G. Strigaro, C. Comi and M.A. Leone

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Optic neuritis (ON) is an acute inflammation of the optic nerve that may cause a complete or partial loss of vision. The classic triad for its clinical diagnosis is visual loss, periocular pain, and dyschromatopsia.[1] ON typically occurs in young adults with an approximately 3:1 female-male ratio. ON is mostly idiopathic but may be associated with autoimmune disorders and infectious, inflammatory, and demyelinating diseases, especially multiple sclerosis. It is diagnosed through a complete ophthalmologic and neurologic evaluation and a prolonged latency of the visual-evoked potentials (VEP). MR imaging with gadolinium is valuable for differential diagnosis.[2]

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Transorbital sonography in optic neuritis. *A–C*, Sonographic examinations of the eye are performed in B-mode imaging in a control subject. *A*, Optic nerve sheath diameter in the control eye is 3 mm behind the papilla (*1*) (*dotted arrow*) in an axial plane showing the optic nerve (*2*) in its longitudinal course. The *dotted arrow* (*3*) denotes the ONSD. *B*, B-scan shows an optic neuritis increase of ONSD (left, 6.8 mm). *C*, In patients with optic neuritis with disc swelling, optic disc elevation is gauged between the fundus and the dome of the papilla.

We analyzed 21 patients with a first episode of ON, 17 women and 4 men; a visual loss >3/10 was present in 18 (85.7%). The right eye was affected in 16, and the left, in 5. Eleven patients had prior MS relapses (ON-MS), though never involving ON, and 10 had isolated ON. We enrolled 21 healthy controls. Mean age and body mass index were not different between patients and controls (**Table**). The **Table** reports clinical features and ONSD and OND values of patients and controls. Interobserver agreement was high for both ONSD (intraclass correlation coefficient, 0.98; 95% CI, 0.93–1.00) and OND (intraclass correlation coefficient, 0.98; 95% CI, 0.92–1.00). The main finding of our study was the statistically significant thickening of the ONSD on the affected side (intraclass correlation coefficient, 6.3 mm; 95% CI, 5.9–7.2 mm) compared with the nonaffected side (intraclass correlation coefficient, 5.5 mm; 95% CI, 5.1–6.2 mm; $P < .0001$) between patients and controls (**Table**). The median OND in the affected side (3.0 mm; range, 2.8–3.1 mm) was similar to that in the nonaffected side (2.9 mm; range, 2.8–3.1 mm) (P = not significant). Both sides were thicker than those in controls (median, 2.7 mm; range, 2.5–2.8 mm; $P = .001$ and .009). The OND and ONSD were strictly correlated both in healthy controls ($r = 0.63$, $P = .002$) and the nonaffected eye ($r = 0.45$, $P = .039$) but not in the affected eye ($r = -0.15$, $P = .51$).

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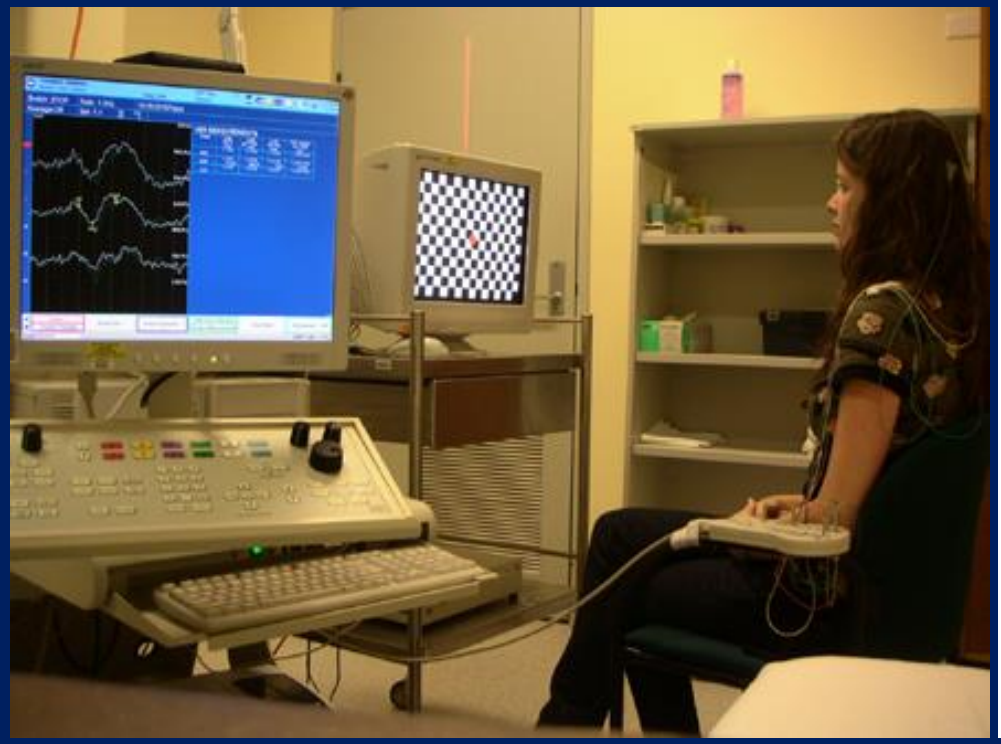
Medical Information

Visual Evoked Potential (VEP)



What is a visual evoked potential? (VEP)

A visual evoked potential is an **evoked potential** caused by a **visual stimulus**, such as an alternating checkerboard pattern on a **computer screen**. Responses are recorded from **electrodes** that are placed on the back of your head and are observed as a reading on an electroencephalogram (EEG). These responses usually originate from the occipital cortex, the area of the brain involved in receiving and interpreting visual signals.

When is the VEP used?

A doctor may recommend that you go for a **VEP test** when you are experiencing **changes in your vision** that can be due to problems along the pathways of certain nerves. Some of these symptoms may include:

- Loss of vision (this can be painful or non-painful);
- Double vision;
- Blurred vision;
- Flashing lights;
- Alterations in colour vision; or
- Weakness of the eyes, arms or legs.

KẾT LUẬN

- Siêu âm mắt đo đường kính bao thần dây kinh thị giác dễ thực hiện đang là phương thức ưa thích, không xâm lấn, gián tiếp đánh giá tăng áp lực nội sọ.
- Kích thước thay đổi ngay khi có sự thay đổi áp lực nội sọ, có thể dùng siêu âm tại giường, giúp chẩn đoán & theo dõi bệnh.
- Nên được dùng thường qui khi nghi ngờ bệnh nhân có tăng áp nội sọ.

CÁM ƠN !