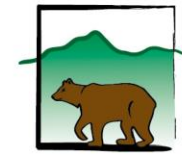


*VI Congresso Triregionale SIN SNO
Liguria, Piemonte e Valle d'Aosta*

Genova, 23 - 24 novembre 2018
Hotel Bristol Palace

Con il patrocinio di



AZIENDA SANITARIA
LOCALE DI **BIELLA**

Amnesia Globale Transitoria Il Versante Venoso

M. Mongiovetti



Transient global amnesia: functional anatomy and clinical implications

Thorsten Bartsch, Günther Deuschl

Amnesia antero-retrograda di durata fino a 24, con perseverazione

New insights into transient global amnesia: recent imaging and clinical findings

Kerstin Sander, Dirk Sander

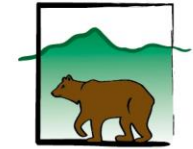
Criteri diagnostici

- Presenza di amnesia antero-retrograda (testimone)
- Assenza di alterazioni dello stato di coscienza
- Deficit cognitivo limitato all'amnesia
- Assenza di segni neurologici focali
- Non segni di epilessia
- Non recente trauma cranico o crisi epilettica
- Risoluzione dei sintomi entro 24 ore
- Possibile presenza di cefalea, nausea e vertigini

Internal Jugular Vein Valve Incompetence Is Highly Prevalent in Transient Global Amnesia

Claudia Cejas, MD; Lucia Fernandez Cisneros, MD; Roberto Lagos, MD;
Carlos Zuk, MD; Sebastián F. Ameriso, MD

ASL BI - AZIENDA SANITARIA DI BIELLA



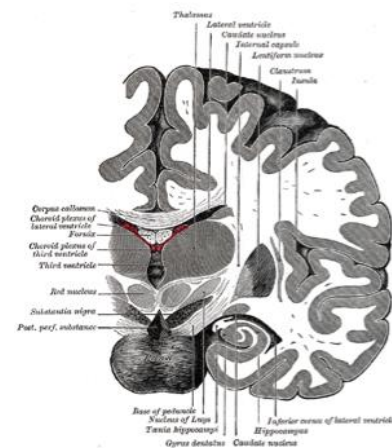
La tua **Salute**, il nostro **Impegno**

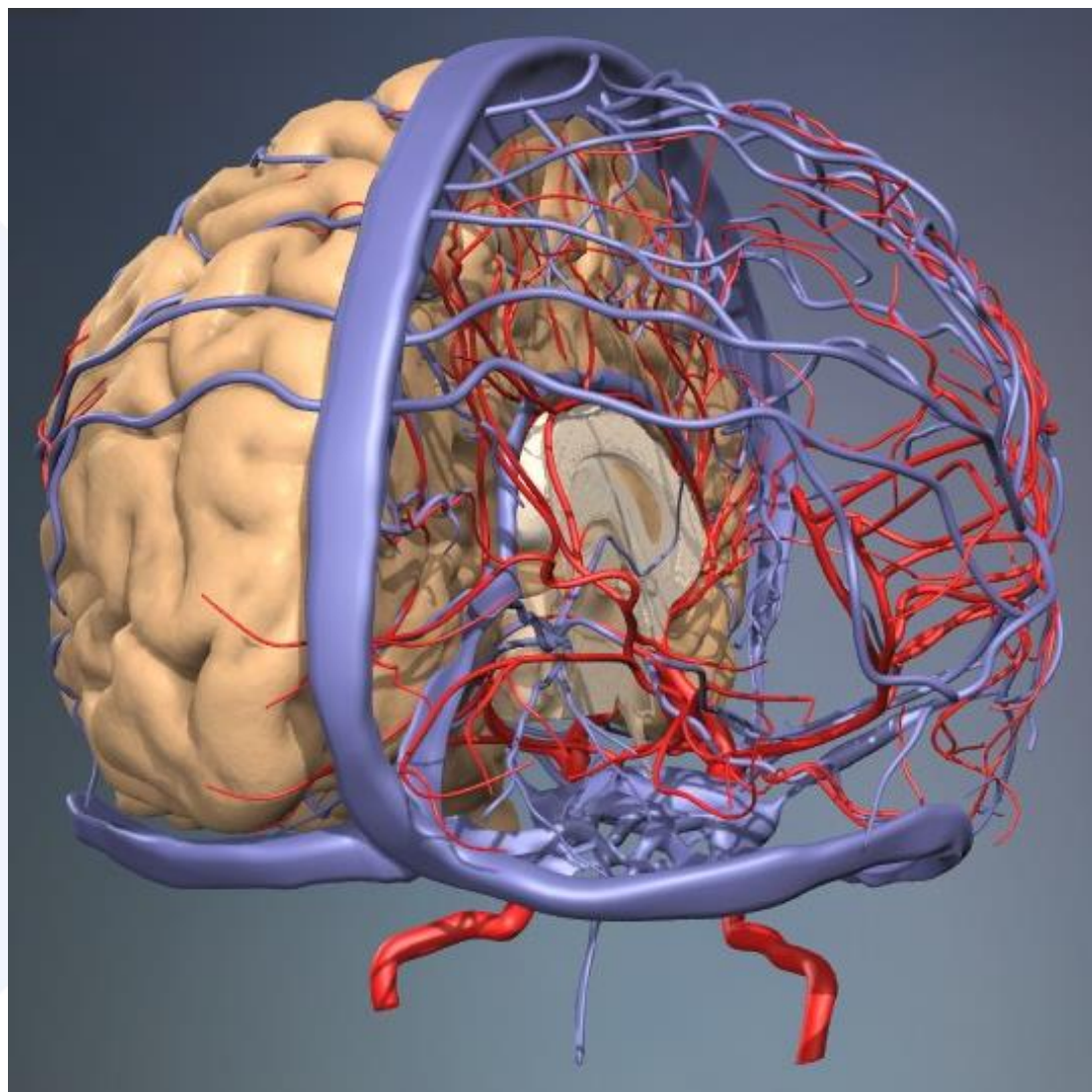
- AGT è una transitoria inabilità a fissare nuove informazioni e recuperare informazioni precedenti
- Occasionalmente innescata da attività sessuale o fisica o immersioni in acqua fredda
- Tipicamente di durata di poche ore con completo recupero (amnesia evento)
- Incidenza 23-32 episodi x 100.000/anno
- Soggetti > 50 anni e in buona salute
- Rari infarti temporo-mesiali sx
- Rare le recidive

Possibili meccanismi fisiopatologici



- Meccanismi emicrania-correlati (spreading-depression)
- Ipossia/ischemia
- Meccanismi psicologici
- Meccanismi epilettiformi
- **Anomalie del flusso venoso**





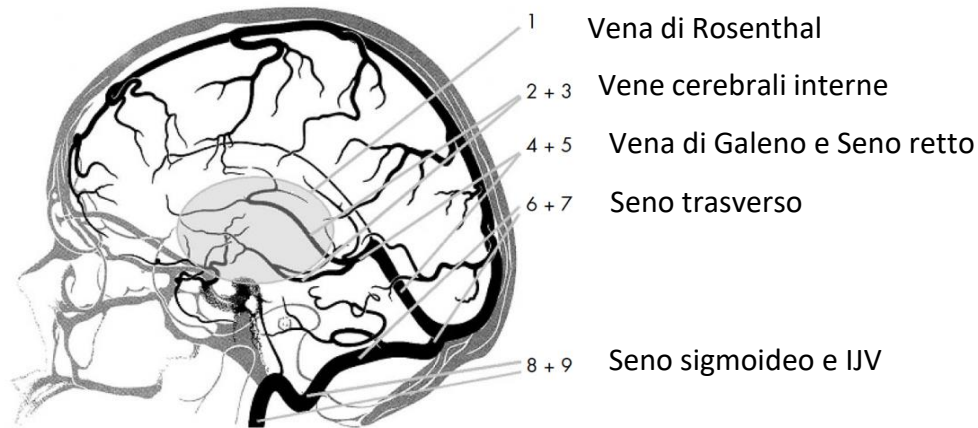
Considerazioni preliminari



Alta prevalenza di insufficienza venosa giugulare in soggetti con AGT

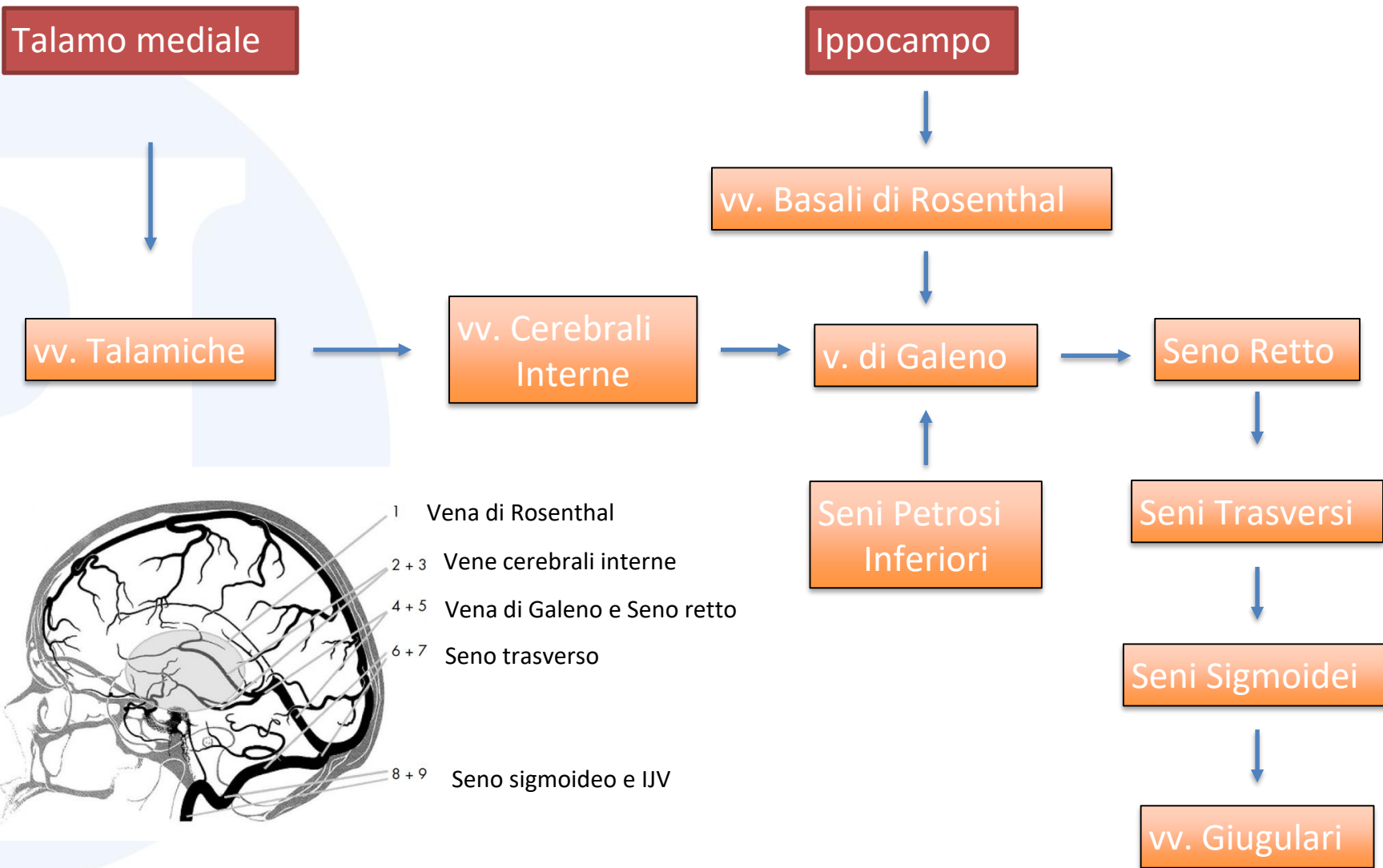
I neuroni dell'ippocampo sono più suscettibili all'ischemia

Trombosi vene basali di Rosenthal/ vene cerebrali interne/ vena di Galeno/ seno retto provocano disturbo della memoria simil Korsakoff con infarto venoso ippocampale o diencefalico

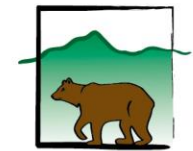




Drenaggio venoso delle strutture della memoria



Ipotesi venosa



Hypothesis

Aetiology of transient global amnesia

Steven L Lewis

The pathophysiology of transient global amnesia (TGA) has been obscure since the definition of this syndrome more than 30 years ago. Current hypotheses include migraine, seizure, or transient cerebral arterial ischaemia. However, none of these potential mechanisms explain both the absence of other neurological signs or symptoms during TGA, and its frequent precipitating activities: many of which would be expected to result in marked increases in venous return from the arms to the superior vena cava. Patients with TGA also commonly have a Valsalva manoeuvre at the onset of attacks. I suggest that a Valsalva manoeuvre, blocking venous return through the superior vena cava, may allow brief retrograde transmission of high venous pressure from the arms to the cerebral venous system, resulting in venous ischaemia to the diencephalon or mesial temporal lobes and to TGA.

I suggest that a Valsalva manoeuvre, blocking venous return through the superior vena cava, may allow brief retrograde transmission of high venous pressure...resulting in venous ischaemia to the diencephalon or mesial temporal lobes and to TGA

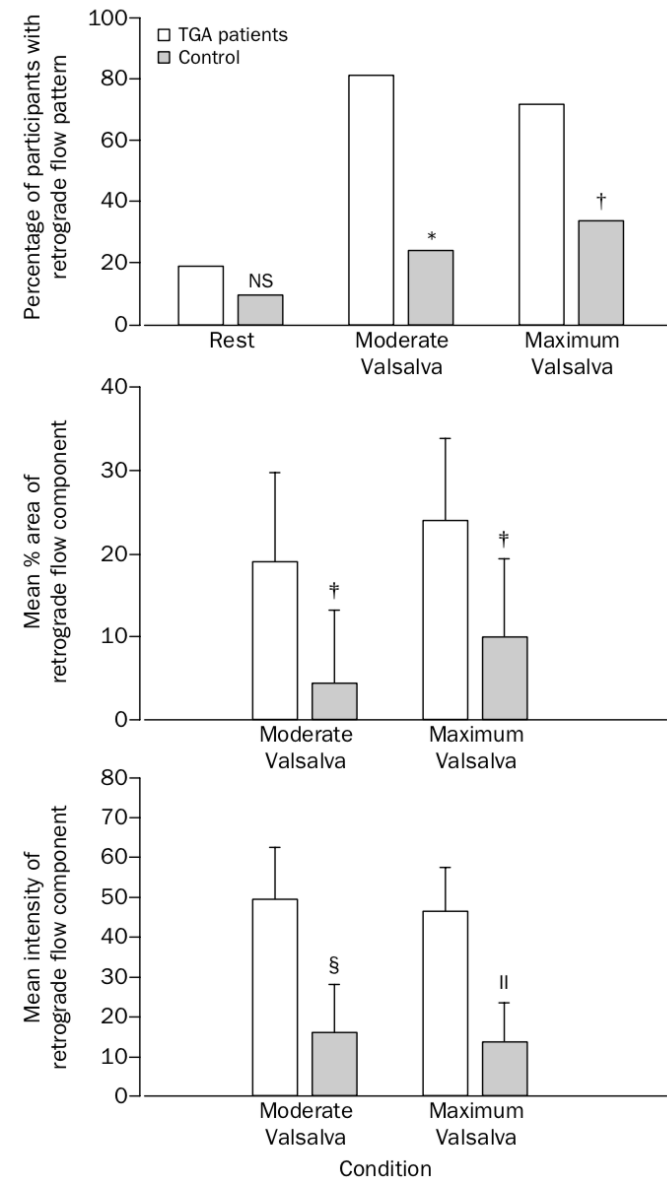
Disturbance of venous flow patterns in patients with transient global amnesia

D Sander, K Winbeck, T Etgen, R Knapp, J Klingelhöfer, B Conrad

	TGA	Controls	p
Number of participants	21	21	
Age (years)*	65 (61–68)	65 (61–68)	NS
Sex (men/women)	8/13	8/13	NS
Mean pack-years of smoking*	20 (17–23)	20 (18–22)	NS
Diabetes mellitus	4 (19%)	4 (19%)	NS
Ischaemic heart disease	3 (14%)	4 (19%)	NS
Mean blood pressure			
Systolic (mm Hg)*	135 (131–139)	133 (130–136)	0.41
Diastolic (mm Hg)*	83 (80–87)	81 (77–84)	0.43
Mean blood cholesterol (mmol/L)*	6.0 (5.5–6.4)	5.9 (2.5–6.3)	0.68
Mean blood triglyceride (mmol/L)*	1.6 (1.4–1.8)	1.6 (1.3–1.9)	0.89
History of migraine	7 (33%)	5 (24%)	0.74
Preceding Valsalva-like activities	10 (48%)	..	..
Coughing	2	..	..
Heavy lifting	3	..	..
Sexual intercourse	2	..	..
Defaecation	1	..	..
Acute pain	2	..	..

*95% CI, NS=not significant.

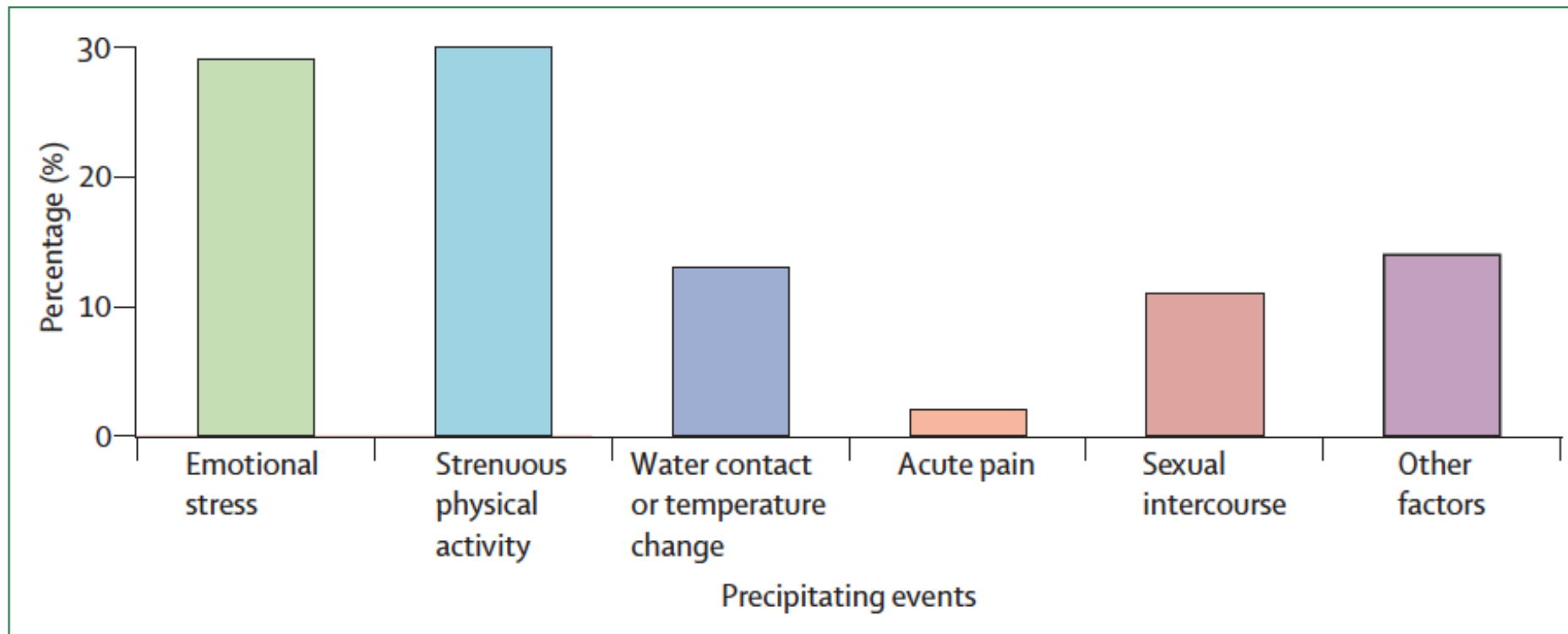
Comparison of TGA patients and controls



Comparison of retrograde flow pattern of the internal jugular vein in TGA patients and controls

New insights into transient global amnesia: recent imaging and clinical findings

Kerstin Sander, Dirk Sander





Max Nedelmann
B. Martin Eicke
Marianne Dieterich

Increased incidence of jugular valve insufficiency in patients with transient global amnesia

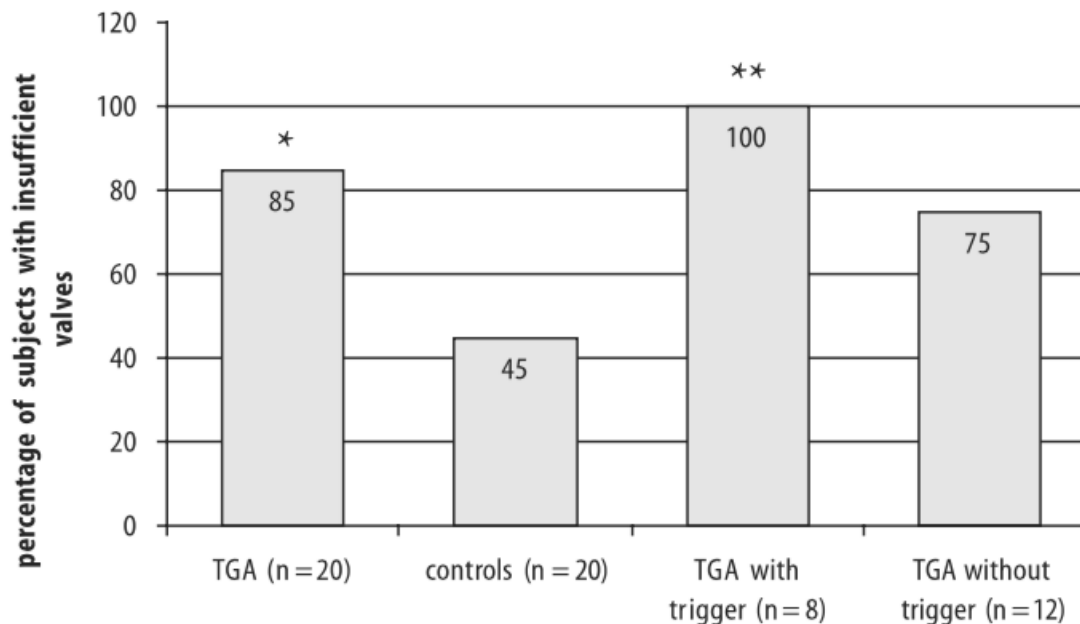
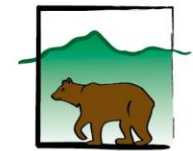


Fig. 1 Incidence of internal jugular valve insufficiency; * The difference in the incidence of valvular insufficiency between patients with TGA and controls was significant ($p = 0.008$); ** The difference between patients with and those without a preceding trigger event did not reach significance ($p = 0.13$)



Internal Jugular Vein Valve Incompetence Is Highly Prevalent in Transient Global Amnesia

Claudia Cejas, MD; Lucia Fernandez Cisneros, MD; Roberto Lagos, MD;
Carlos Zuk, MD; Sebastián F. Ameriso, MD

Background and Purpose—Transient global amnesia (TGA) is the inability to retain new information and to recall past events during a period of minutes or hours. Its etiology is unclear, and flow disturbances in the mesial temporal lobes secondary to venous congestion have been proposed as a potential cause. Ultrasonographic evaluation of the internal jugular vein (IJV) has demonstrated valvular insufficiency in TGA. The prevalence of valvular insufficiency in the IJV in patients with TGA was assessed. Subjects without TGA of similar sex, age, and vascular risk factor profiles served as controls.

Methods—A group of 142 patients with a clinical diagnosis of TGA within 7 days of the clinical event and 40 controls were prospectively evaluated. Venous Doppler examination of both IJVs was performed at baseline and after a manometer-controlled Valsalva maneuver. Valvular insufficiency was diagnosed when there was reflux for >0.8 seconds during the Valsalva maneuver.

Results—Valve insufficiency was found in at least one jugular vein in 113 of 142 patients with TGA (79.5%) and in 10 of 40 controls (25.0%), $P < 0.01$. The right side was affected more often than the left side, $P < 0.01$, and 26.8% of the patients had bilateral incompetence.

Conclusions—Patients with TGA have a high prevalence of IJV valve insufficiency. This finding may have pathophysiologic implications. Doppler evaluation of the IJVs with dynamic maneuvers may help in the evaluation of this usually benign condition. (*Stroke*. 2010;41:67-71.)

Internal Jugular Vein Valve Incompetence Is Highly Prevalent in Transient Global Amnesia

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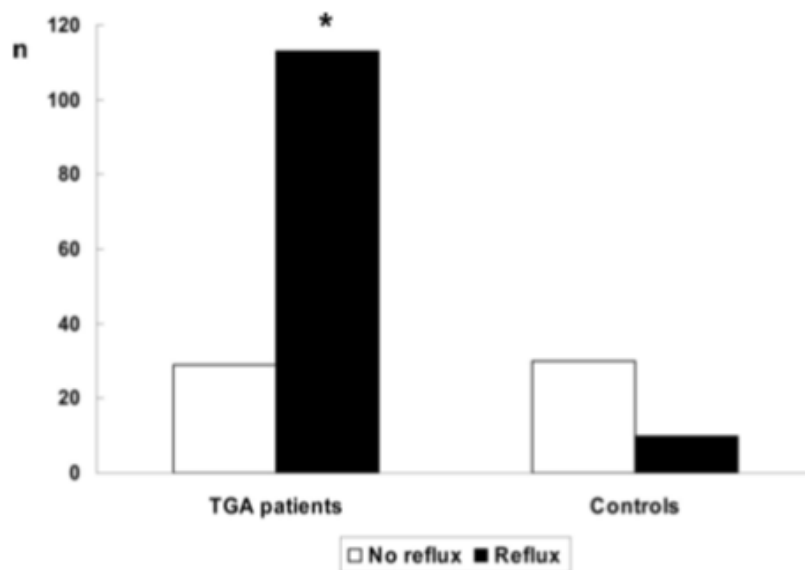


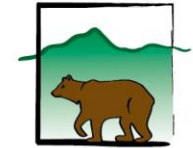
Figure 5. IJV reflux in patients and controls (see text for details). * $P < 0.01$ vs controls, 2-tailed Fisher exact t test.

Internal Jugular Vein Valve Incompetence in Transient Global Amnesia

More Circumstantial Evidence or the Proof Solving the Mystery?

Claudia Altamura, MD; Fabrizio Vernieri, MD

...the evidence of a high prevalence of IJV valve incompetence in patients with TGA provides an important basis for understanding TGA pathophysiology, but the mystery remains partly unresolved...



Transient Global Amnesia and Jugular Vein Incompetence

Stroke. 2010;41:e568

To the Editor:

In the January issue of *Stroke*, Cejas et al¹ documented the frequency of jugular vein incompetence in patients with transient global amnesia, and Altamura and Vernier² editorialized on the subject. Neither communication wrestles with the major dilemma in assigning a causal relationship to the venous phenomenon, namely “How can a very transient change in venous drainage from the cranium account for a disorder that invariably lasts hours?” Increased venous pressure, even when sustained as in patients with congestive heart failure and pericardial effusions, has not been recognized as causing transient global amnesia.

Louis R. Caplan, MD
Beth Israel Deaconess Med Center
Boston, Mass

'Les ictus amnésiques' and Transient Global Amnesia

J.M.S. Pearce^a Julien Bogousslavsky^b

Abstract

In March 1909, R. Benon was probably the first to report a typical case of what we now call transient global amnesia. In 1956, Bender, and independently, Guyotat and Courjon described clinical and epidemiological features of transient amnesic attacks. The condition achieved general recognition after the term *transient global amnesia* (TGA) was introduced by Fisher and Adams in 1958. Their historic work is the main focus of this review. They reported 17 patients, with an abrupt anterograde amnesia of short duration. Classification and criteria are outlined. Various aetiologies have been postulated, but although TGA remains a clinically distinct syndrome, usually with a good prognosis, evidence of neither ischaemia nor epilepsy is demonstrable in most patients. Theories of jugular venous reflux may be relevant in some but probably not in most cases of this heterogeneous disorder.

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Jugular Veins in Transient Global Amnesia

Innocent Bystanders

Claudio Baracchini, MD; Simone Tonello, MD; Filippo Farina, MD; Federica Viaro, MD;
Matteo Atzori, MD; Enzo Ballotta, MD; Renzo Manara, MD

Table 2. Ultrasound Data of Patients With Transient Global Amnesia and Normal Control Subjects

Characteristics	TGA	NC
IJV		
Reflux at rest	0/75 (0%)	0/75 (0%)
Reflux >0.88 s during VM	53/75 (70.7%)	22/75 (29.3%)
Side of reflux: right/left/bilateral	26/19/8	12/5/5
BVR		
Mean blood flow velocities at rest, cm/s±SD	14±2	14±2
Mean blood flow velocities during VM, cm/s±SD	11±2	11±2
Reflux at rest, no. (%)	0/75 (0%)	0/75 (0%)
Reflux during VM, no. (%)	0/75 (0%)	0/75 (0%)
VG		
Mean blood flow velocities at rest, cm/s±SD	13±2	13±2
Mean blood flow velocities during VM, cm/s±SD	10±2	10±2
Reflux at rest, no. (%)	0/75 (0%)	0/75 (0%)
Reflux during VM, no. (%)	0/75 (0%)	0/75 (0%)

IJV indicates internal jugular vein; VM, Valsalva-associated maneuvers; BVR, basal vein of Rosenthal; VG, unpaired vein of Galen.

Letters to the Editor

Letter by Griebbe et al Regarding Article, “Jugular Veins in Transient Global Amnesia: Innocent Bystanders”

Stroke. 2012;43:e165

The recent publication of Baracchini et al entitled “Jugular Veins in Transient Global Amnesia”¹ in *Stroke* reports extra- and transcranial high-resolution venous echo-color Doppler sonography findings in patients who have had an episode of transient global amnesia (TGA). The main finding of the authors is the absence of any intracranial venous hemodynamic alteration in these patients as compared with control subjects. They suggest that future research should be aimed at the assessment of intracranial venous hemodynamics during the acute stage of TGA.

In line with the assumption that TGA is a disorder caused by the stress-related transient inhibition of memory formation in the hippocampus, we propose that patients with TGA exhibit increased reactivity to stress and that changes in brain activation patterns during memory formation and retrieval are a pathophysiological correlate of TGA. To test these hypotheses, we are currently

Martin Griebbe, MD

Michael G. Hennerici, MD

Kristina Szabo, MD

*Department of Neurology
UniversitätsMedizin Mannheim
University of Heidelberg
Heidelberg, Germany*



Jugular Valve Incompetence in Transient Global Amnesia. A Problem Revisited

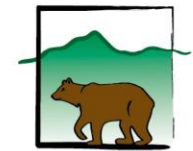
Piergiorgio Lochner, MD, Max Nedelmann, MD, Manfred Kaps, MD, Erwin Stolz, MD

From the Department of Neurology, Justus-Liebig University, Giessen, Germany (PL, MN, MK); Department of Neurology, Krankenhaus Meran, Meran, Italy (PL); and Department of Neurology, Caritasklinikum Saarbruecken, Saarbruecken, Germany (ES).

Table 3. Comparison of the Effect of Internal Jugular Vein Valve Competence and Incompetence on Intracranial Venous Flow Velocities

	No IJVVI	Unilat. IJVVI	Bilat. IJVVI	<i>P</i>
Supine				
FV at rest [cm/s]	12.4 ± 3.1	11.9 ± 3.2	12.3 ± 3.4	0.78
Valsalva				
Phase 1 FV [cm/s]	14.1 ± 4.6	13.3 ± 4.2	15.6 ± 9.2	0.82
Phase 2a FV [cm/s]	8.3 ± 1.8	8.4 ± 2.5	8.6 ± 2.4	0.93
Phase 4 FV [cm/s]	14.7 ± 4.1	16.9 ± 5.4	14.8 ± 3.8	0.87
Reflux [<i>n</i> / <i>N</i>]	0	0	0	n.s.
Sitting				
FV at rest [cm/s]	11.7 ± 2.9	10.9 ± 2.4	11.3 ± 2.8	0.50
Valsalva				
Phase 1 FV [cm/s]	15.3 ± 6.3	12.0 ± 3.0	15.8 ± 10.2	0.10
Phase 2a FV [cm/s]	7.5 ± 1.5	7.1 ± 1.6	8.0 ± 2.1	0.32
Phase 4 FV [cm/s]	14.4 ± 3.5	14.8 ± 5.9	15.1 ± 3.7	0.71
Reflux [<i>n</i> / <i>N</i>]	0	0	0	n.s.

IJVVI = internal jugular vein valve incompetence; FV = flow velocity; n.s. = not significant.



Jugular Valve Incompetence in Transient Global Amnesia. A Problem Revisited

Piergiorgio Lochner, MD, Max Nedelmann, MD, Manfred Kaps, MD, Erwin Stolz, MD

From the Department of Neurology, Justus-Liebig University, Giessen, Germany (PL, MN, MK); Department of Neurology, Krankenhaus Meran, Meran, Italy (PL); and Department of Neurology, Caritasklinikum Saarbruecken, Saarbruecken, Germany (ES).

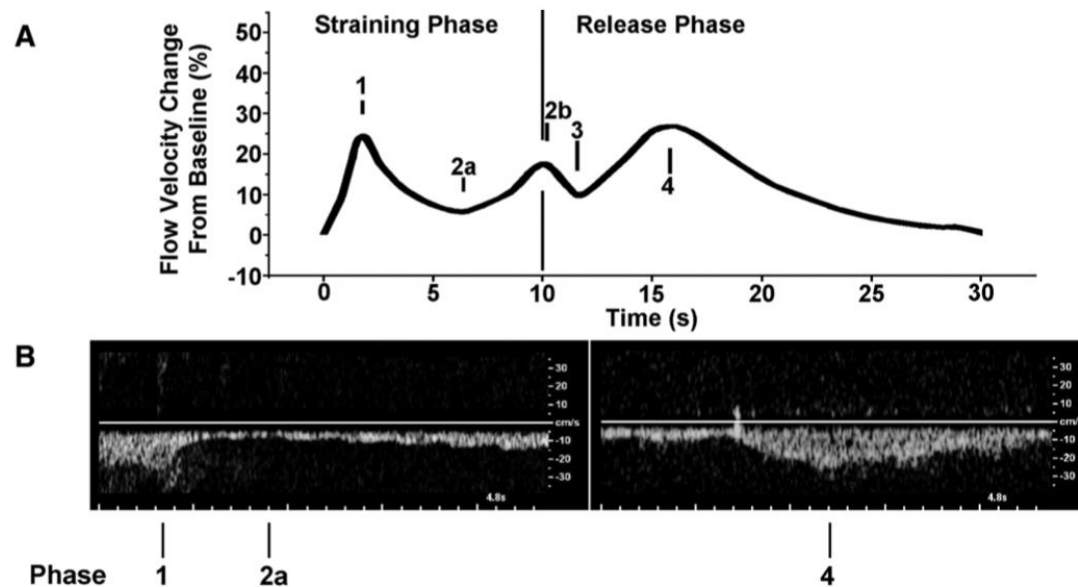


Fig 1. Effect of a Valsava Maneuver on the intracranial venous circulation. A) Schematic change of venous flow velocities during and after a Valsava maneuver based on data of Stolz et al [15]. B) Example of flow velocity measurement in the basal vein.

Cerebrovascular Risk Factors and Triggers in Transient Global Amnesia Patients with and without Jugular Valve Incompetence: Results from a Sample of 243 Patients

C. Agosti^a B. Borroni^a N.M. Akkawi^b A. Padovani^a

Table 2. Vascular comorbidities and precipitating risk factors according to the presence of JVI

Variable	JVI-negative	JVI-positive	Total sample	p*
<i>Vascular comorbidities, %</i>				
Hypertension	51.4 (37)	37.2 (64)	41.5 (101)	0.047
Carotid arteriosclerosis	31.9 (23)	20.5 (35)	23.9 (58)	0.050
Hypercholesterolemia	41.7 (30)	35.6 (61)	37.4 (91)	0.396
Cardiomyopathy	15.3 (11)	12.2 (21)	13.1 (37)	0.539
Diabetes	2.8 (2)	1.7 (3)	2.0 (5)	0.613
<i>Precipitating factors, %</i>				
Emotion ^a	21.4 (15)	36.6 (60)	32.1 (75)	0.023
Valsalva maneuver ^a	17.1 (12)	35.8 (59)	30.2 (71)	0.004
Cold water	2.7 (2)	6.4 (11)	5.3 (13)	0.235
Driving	1.4 (1)	4.0 (7)	3.2 (8)	0.274

^a Differences in the total are due to missing values (n = 8).

Numbers in parentheses represent number of subjects. * JVI-negative versus JVI-positive.

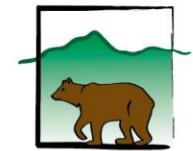
Comprehensive Ultrasound Assessment of the Craniocervical Circulation in Transient Global Amnesia

Zagorka B. Jovanovic, MD, PhD , Aleksandra M. Pavlovic, MD, PhD, Bosiljka P. Vujisic Tesic, MD, PhD, Tatjana P. Pekmezovic, MD, PhD, Marija V. Kostic Boricic, MD, Edita Z. Cvitan, MD, Nadezda M. Covickovic Sternic, MD, PhD

Table 3. Ultrasound Parameters in the TGA and Control Groups

Parameter	TGA (n = 100)	Control (n = 50)	P	OR (95% CI)
Right CCA IMT, mm	0.997 ± 0.247	0.986 ± 0.197	.300	0.41 (0.08–2.21)
Left CCA IMT, mm	1.029 ± 0.241	0.990 ± 0.182	.141	0.26 (0.04–1.57)
Plaques on CCA	51 (51)	30 (60)	.384	0.73 (0.36–1.48)
ICA stenosis, %	28.7 ± 11.7	29.3 ± 10.9	.772	1.07 (0.96–1.05)
IJV incompetence	54 (54; 29 B, 25 U)	11 (22; 4 B, 7 U)	<.001	4.16 (1.91–9.04)
Right MCA PI	0.85 ± 0.28	0.83 ± 0.16	.232	2.03 (0.64–6.47)
Left MCA PI	0.85 ± 0.28	0.83 ± 0.17	.595	1.34 (0.45–4.01)
BA PI	0.95 ± 0.27	0.91 ± 0.21	.075	2.57 (0.91–7.26)
Right MCA BHI	1.28 ± 0.43	1.31 ± 0.37	.290	1.45 (0.73–2.89)
Left MCA BHI	1.26 ± 0.38	1.35 ± 0.36	.162	1.63 (0.82–3.24)
Microembolic symbol+	13 (13; 7 B, 6 U)	5 (10; 2 B, 3 U)	.201	2.34 (0.63–8.63)
Bubble test+	16 (16; 7 C, 9 P)	9 (18; 2 C, 7 P)	.965	0.98 (0.40–2.39)
TEE	2 PFO, 4 ASA, 2 MVP	1 PFO, 1 ASA, 1 MVP	.469	1.36 (0.31–6.83)

Data are presented as mean ± SD and number (percent) where applicable. ASA indicates atrial septal aneurysm; B, bilateral; BA, basilar artery; BHI, breath-holding index; C, cardiac; CCA, common carotid artery; CI, confidence interval; ICA, internal carotid artery; IMT, intima-media thickness; MCA, middle cerebral artery; MVP, mitral valve prolapse; P, pulmonic; PFO, patent foramen ovale; and U, unilateral.



Functional and morphological criteria of internal jugular valve insufficiency as assessed by ultrasound.

Nedelmann M¹, Eicke BM, Dieterich M.

Criteri US per la valutazione dell'IVG



- Paziente in posizione supina
- Ecocolor-doppler con sonde lineari/convex/microconvex
- Esplorazione della porzione distale della IJV
- Studio del piano valvolare durante respirazione e MdV
- Studio del flusso al box colore durante respirazione e MdV
- Campionamento Doppler per valutazione flusso e durata dell'eventuale reflusso
- Esame che va eseguito in entrambi i lati



Functional and morphological criteria of internal jugular valve insufficiency as assessed by ultrasound.

Nedelmann M¹, Eicke BM, Dieterich M.

Internal Jugular Vein Valve Incompetence Is Highly Prevalent in Transient Global Amnesia

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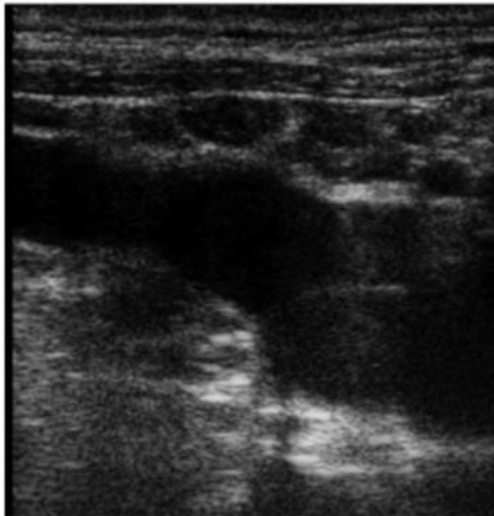
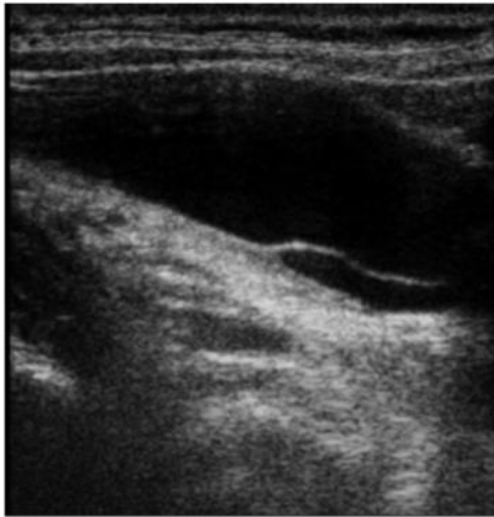


Figure 1. Visualization of the IJV in B-mode ultrasound in a normal control. Top, open jugular valve; bottom, valve closure.

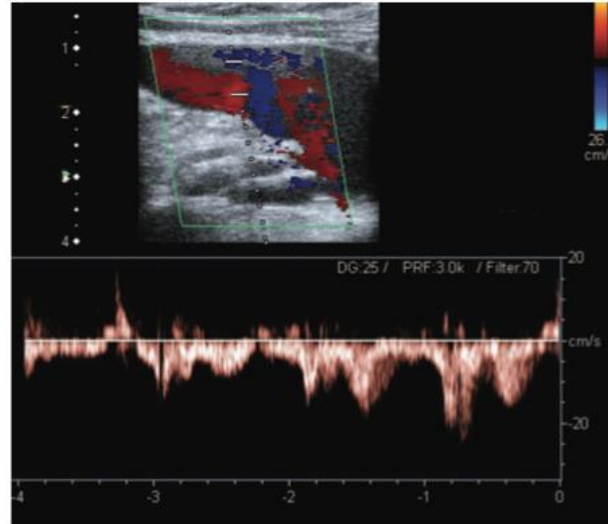


Figure 2. IJV flow at baseline.

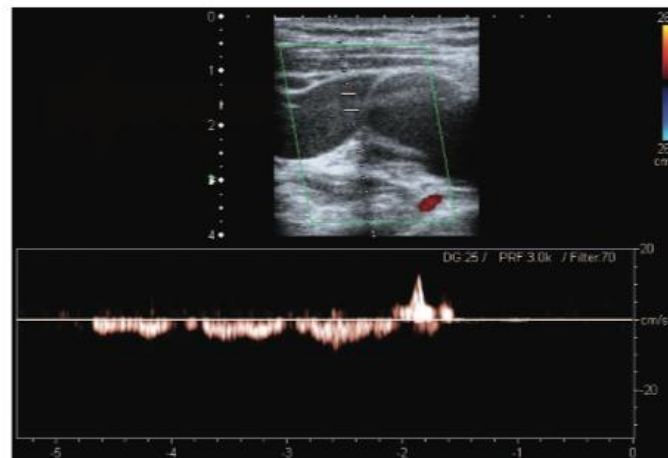


Figure 3. Normal IJV valve closure during Valsalva maneuver.

Internal Jugular Vein Valve Incompetence Is Highly Prevalent in Transient Global Amnesia

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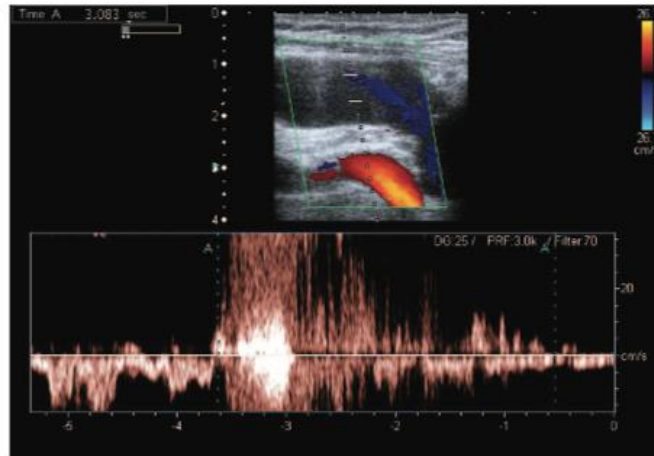
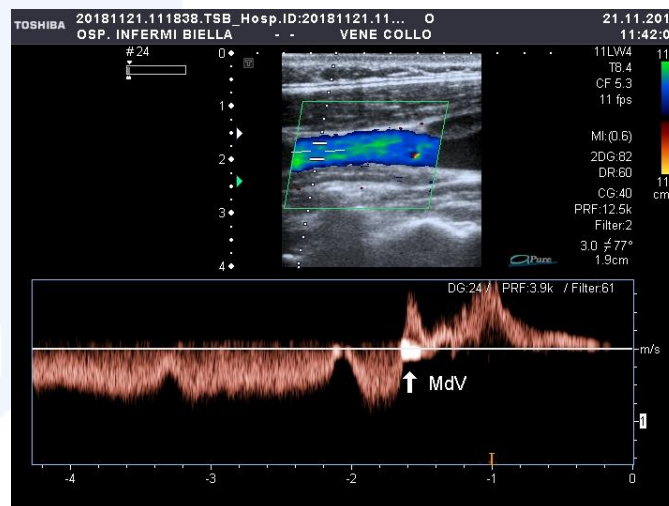


Figure 4. IJV valve insufficiency. Reflux for >3 seconds during the Valsalva maneuver in a patient with TGA.

Stroke. 2010;41:67-71

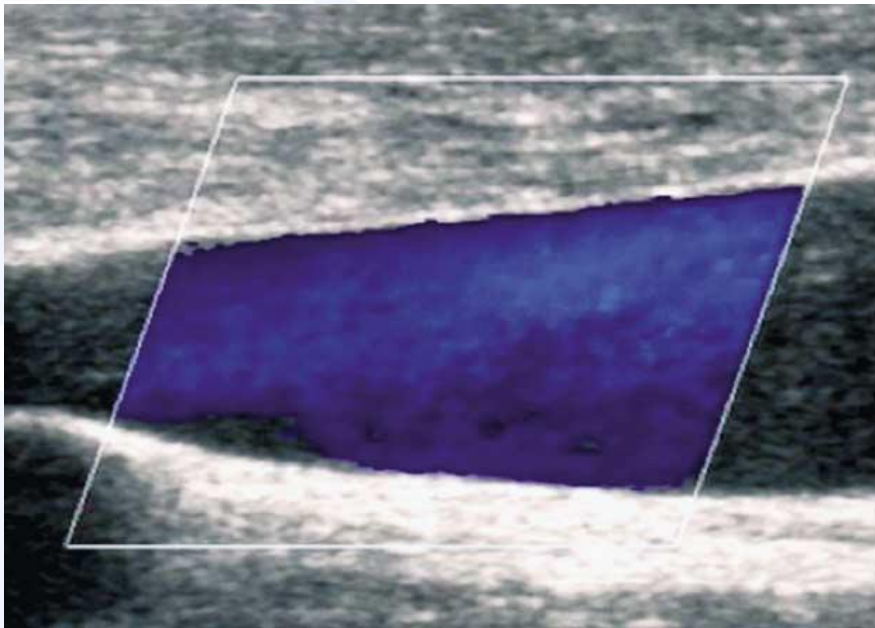


Caso clinico ambulatoriale

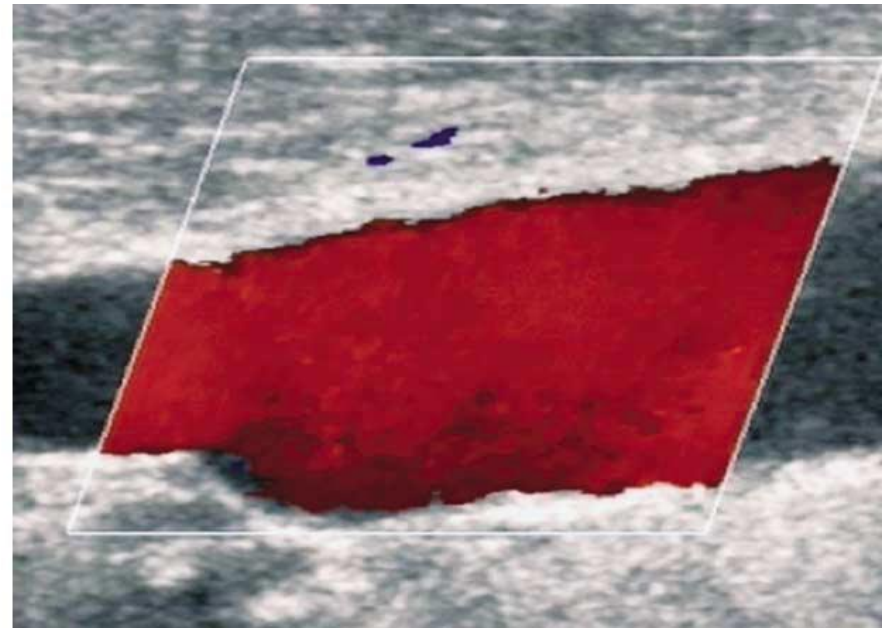
New insights into transient global amnesia: recent imaging and clinical findings

Kerstin Sander, Dirk Sander

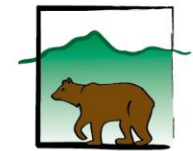
Insufficienza valvolare IJV



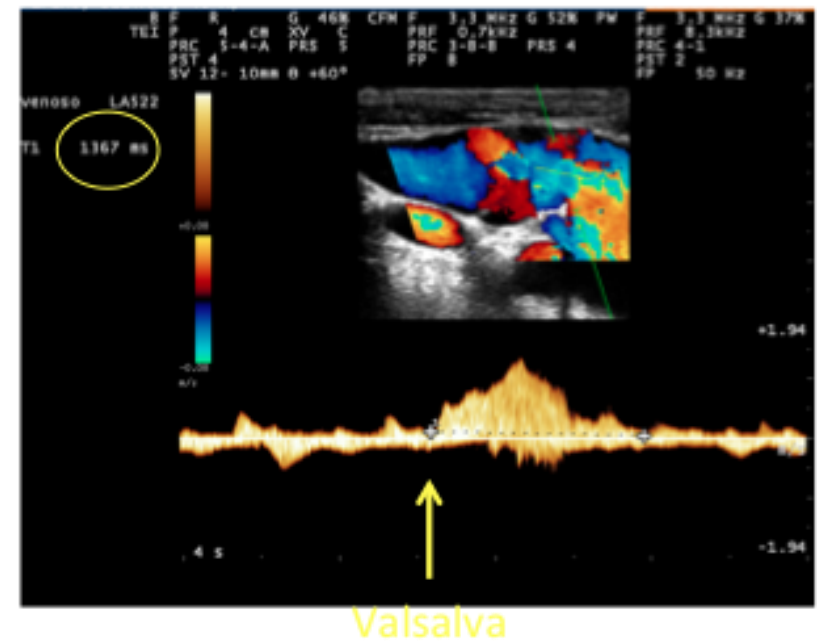
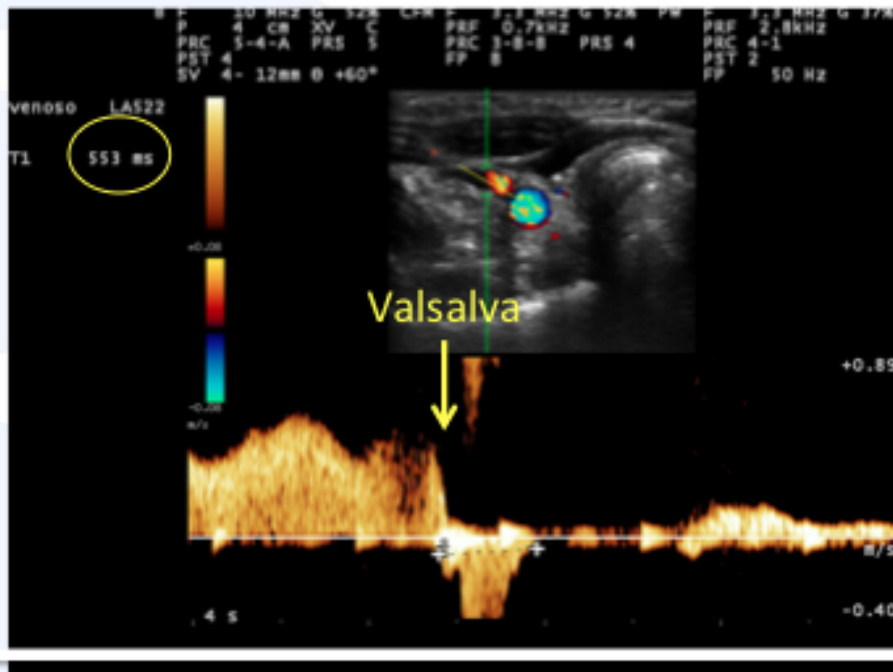
Basale



In Valsalva



Valutazione dell'insufficienza venosa





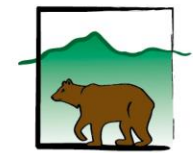
Functional and morphological criteria of internal jugular valve insufficiency as assessed by ultrasound.

Nedelmann M¹, Eicke BM, Dieterich M.

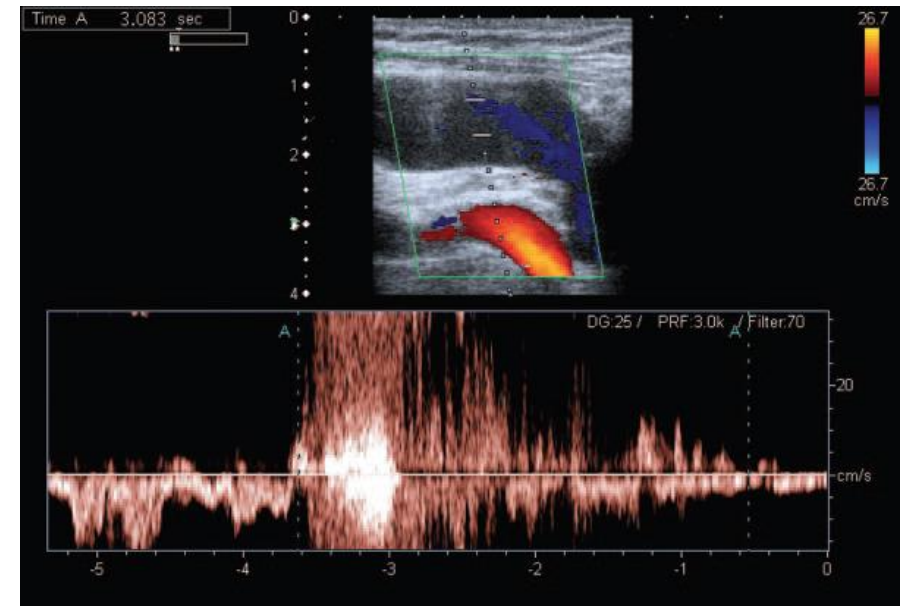
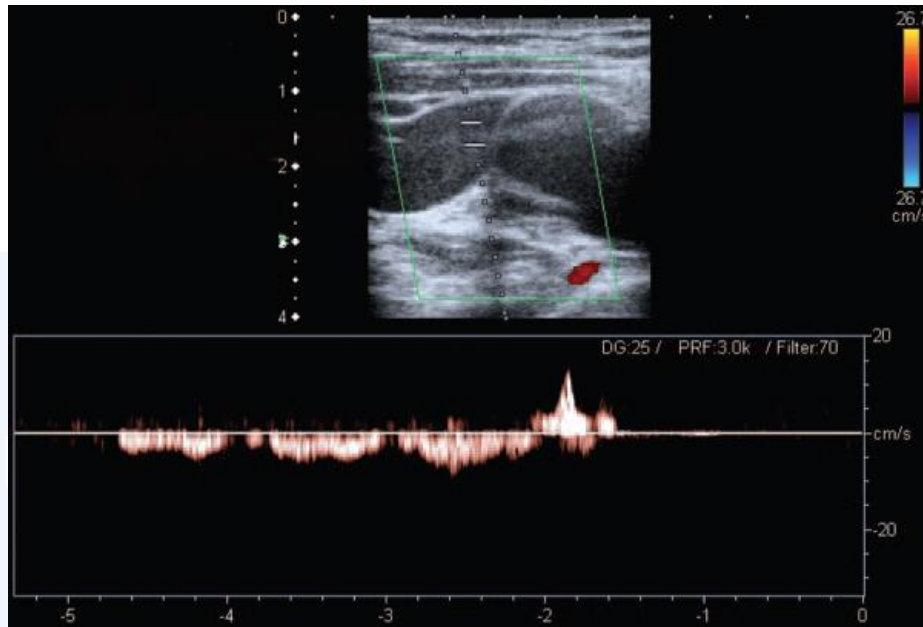
Criteria to Differentiate Between Insufficiency and Retrograde Flow During Valve Closure

	Duration of Reflux ($\bar{x} + 3 \times \text{SD}$)	PFV ($\bar{x} + 3 \times \text{SD}$)	PFV ($\bar{x} + 2 \times \text{SD}$)
Cutoff, cm/s	≥ 0.88	≥ 59.5	≥ 48.3
Sensitivity, %	100	77	88
Specificity, %	100	98	95
Positive predictive value, %	100	94	87
Negative predictive value, %	100	92	94

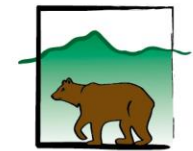
Cutoff values for the duration of reflux and peak flow velocity (PFV) are based on Doppler recordings in competent valves.



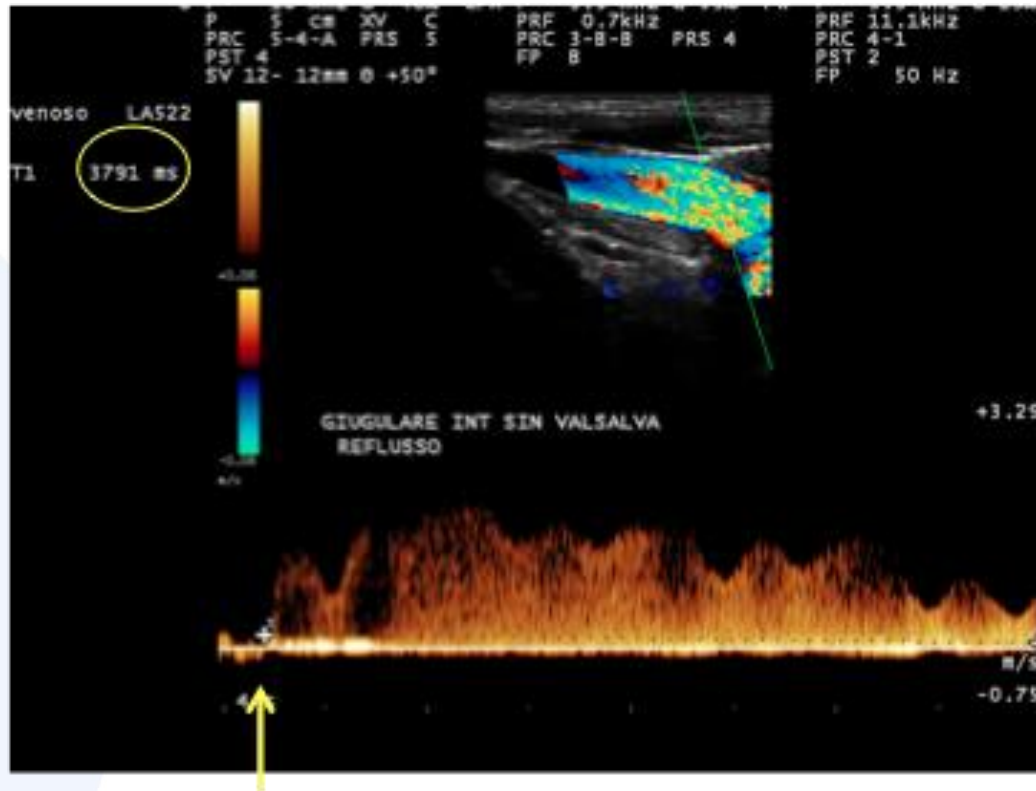
Normale chiusura valvolare durante manovra di Valsalva



Insufficienza valvolare con reflusso
> 3" durante manovra di Valsalva



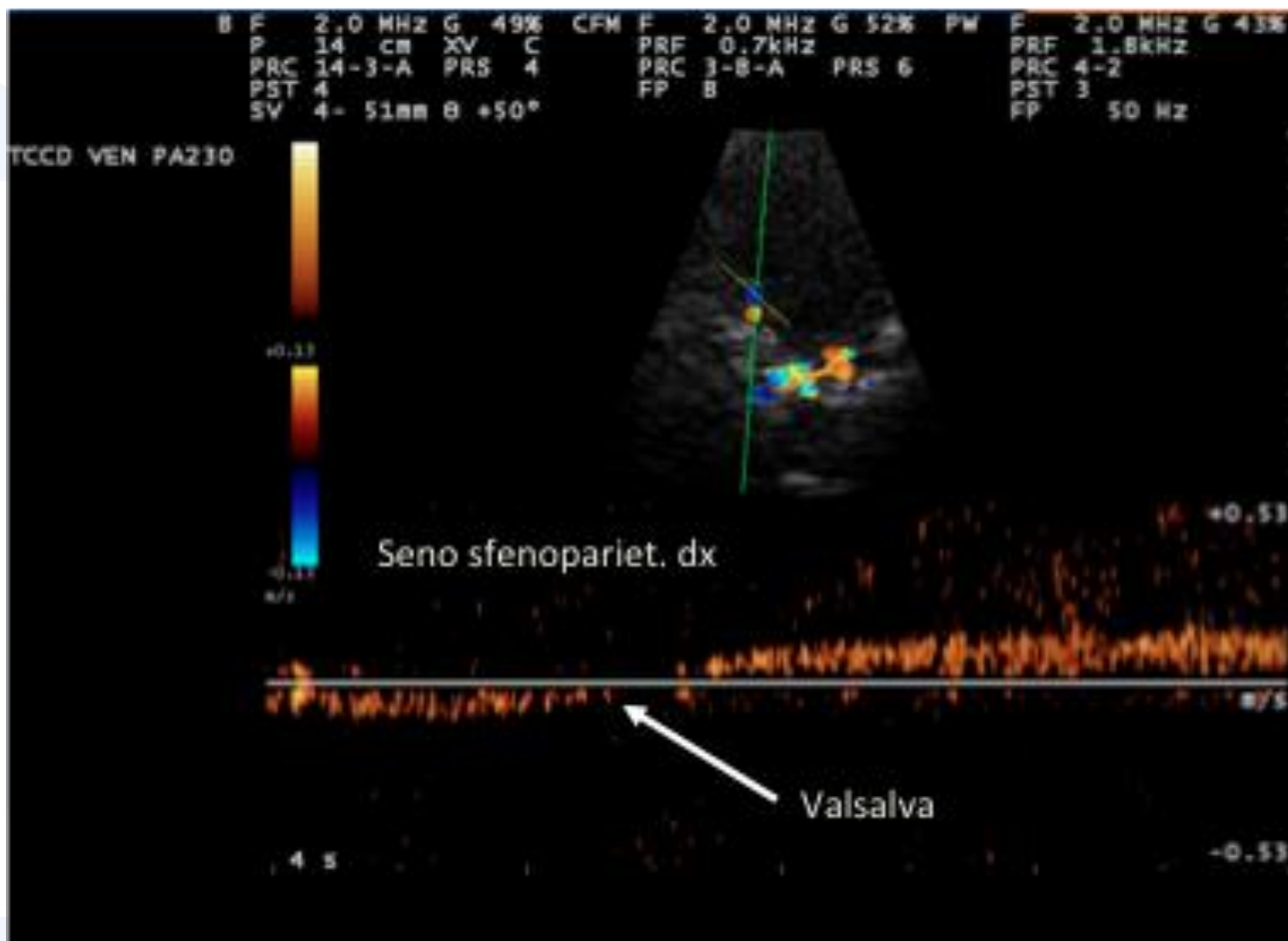
Valutazione dell'insufficienza venosa



Valsalva

durata del reflusso 3791 ms

Distretto intracranico



La nostra esperienza



57 anni; cavernosa cerebrale; residua emiparesi dx; epilessia sintomatica.

Negli ultimi due mesi 3 episodi di AGT.



AMNESIA GLOBALE TRANSITORIA E SONOLOGIA DEL DISTRETTO VENOSO CERVICALE: ESPERIENZA SUL CAMPO IN UNA AZIENDA DI PROVINCIA.

M. Mongiovetti¹, G. Gusmaroli¹, E. Schintone¹, P. Pastorello¹, M. Ravagnani¹.

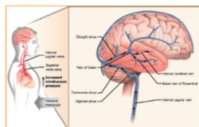
¹ Ospedale degli Infermi di Biella - Struttura complessa di Neurologia - Biella

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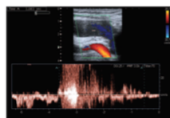
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¹ Ospedale degli Infermi di Biella - Struttura complessa di Neurologia - Biella

Introduzione: L'amnesia globale transitoria (AGT) è una sindrome clinica caratterizzata dalla presenza di amnesia anterograda e domande ripetitive, talora associata ad una componente retrograda, che si risolve spontaneamente entro le 24 ore dall'esordio, in assenza di alterazioni dello stato di coscienza e di segni neurologici focali. Questi episodi sono talora preceduti da eventi precipitanti come attività preceduta da Manovra di Valsalva (MdV), stress emotivi, immersioni in acqua fredda o calda, attività sessuale, dolore. L'AGT coinvolge generalmente soggetti di età superiore ai 50 anni in buone condizioni di salute. Le cellule del sottocampo CA1 del corno di Ammone dell'ippocampo (che è la parte dell'ippocampo più colpita dall'AGT) hanno una particolare vulnerabilità allo stress metabolico causata da ipossia, ipossia indotta da B-amiloide ed ischemia. Tra i numerosi meccanismi patofisiologici dell'AGT proposti vengono annoverati: fenomeni emicranici o epilettici, eventi ischemici arteriosi o anomalie del flusso venoso. Si ritiene che eventi precipitanti associati a manovra di Valsalva ed aumento della pressione intratoracica impedirebbero il ritorno venoso alla vena cava superiore e, in presenza di un'insufficienza valvolare giugulare, condurrebbero ad un flusso venoso retrogrado in giugulare con conseguente ipertensione venosa nei lobi temporali mesiali. Nei pazienti con AGT è stata individuata un'alta prevalenza di pazienti con insufficienza (valvolare) venosa giugulare, con percentuali variabili sino al 75% delle casistiche.

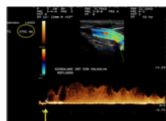


Obiettivo: valutare il distretto venoso cervicale in pazienti pervenuti alla nostra attenzione in seguito ad uno o più episodi di amnesia globale transitoria.

Metodi: abbiamo sottoposto allo studio con eco-color-doppler venoso cervicale, basale e durante manovra di Valsalva MdV, 36 soggetti, 20 femmine e 16 maschi (età media 67 anni; range da 41 a 85 anni) con anamnesi positiva AGT. Per ciascun paziente sono stati effettuati bilateralmente un'esplorazione della porzione distale della vena giugulare interna, uno studio del piano valvolare durante respirazione e MdV, uno studio del flusso al box colore durante respirazione e MdV, un campionamento Doppler per la valutazione del flusso e la durata dell'eventuale reflusso.

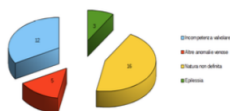
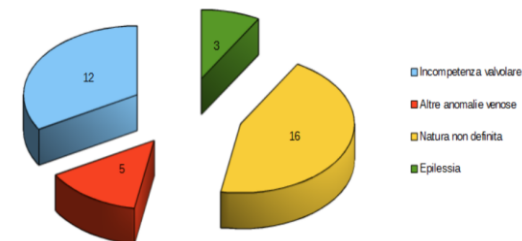


Insufficienza valvolare con reflusso > 3" durante manovra di Valsalva



Valsalva reflusso Durata del reflusso 3791 ms

Risultati: Nel campione preso in esame sono stati identificati 12 casi con insufficienza valvolare delle vene giugulari, di cui 4 bilaterali; 5 casi con altre anomalie del distretto venoso; 16 casi senza significative alterazioni del distretto venoso; e 3 casi con epilessia.



Risultati: Nel campione preso in esame sono stati identificati 12 casi con insufficienza valvolare delle vene giugulari, di cui 4 bilaterali; 5 casi con altre anomalie del distretto venoso; 16 casi senza significative alterazioni del distretto venoso; e 3 casi con epilessia.

Conclusioni: il dato ottenuto, pur se inferiore a quanto riportato nella letteratura internazionale, depone per un utilizzo sistematico della sonografia venosa cervicale nella diagnostica delle AGT, anche nella routine di Centri periferici.

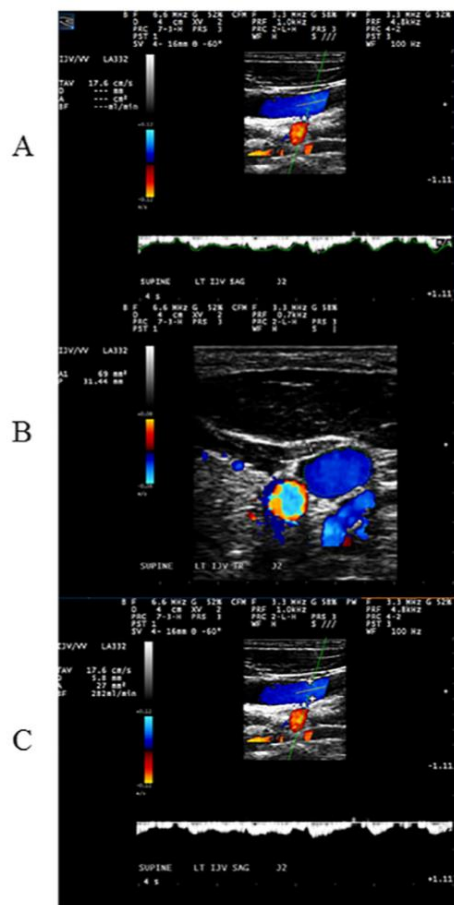
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JUGULAR VENOUS FLOW QUANTIFICATION USING DOPPLER SONOGRAPHY

KAREN MARR,* DEJAN JAKIMOVSKI,* MARCELLO MANCINI,[†] ELLEN CARL,* and
ROBERT ZIVADINOV*,[‡]

* Buffalo Neuroimaging Analysis Center, Department of Neurology, Jacobs School of Medicine and Biomedical Sciences, University at Buffalo, State University of New York, Buffalo, New York, USA; [†] Institute of Biostructure and Bioimaging, National Research Council of Italy, Rome, Italy; and [‡] Center for Biomedical Imaging at Clinical Translational Science Institute, University at Buffalo, State University of New York, Buffalo, New York, USA



D Manual Calculation Formula

$$\text{Flow} = \text{CSA (mm}^2\text{)} * \text{TAV manual tracing (cm/s)} * 60/100 = 728 \text{ ml/min}$$

E Semi-Automated Blood Volume Calculation

$$\text{Flow} = (\text{diameter (mm)} / 2)^2 * \pi * \text{TAV manual tracing (cm/s)} * 60/100 = 282 \text{ ml/min}$$

Uno sguardo al...
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JUGULAR VEIN FLOW QUANTIFICATION USING DOPPLER SONOGRAPHY

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Table 3. Doppler characteristics of the vessels measured in 83 healthy individuals

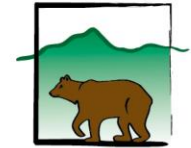
Site of measurement	Diameter (mm ²)	TAV (cm/s)	Semi-automated CSA (mm ²)	Manual CSA (mm ²)	Semi-automated calculation of BFV (mL/min)	Manual calculation of BFV (mL/min)	Correlation between methods [*]
<i>Venous side</i>							
R upper IJV	5.9 (2.1) [†]	22.6 (11.2)	30.9 (21.4)	69.5 (39.4)	390.9 (249.5)	890.2 (557.9)	0.580
L upper IJV	4.9 (1.8)	21.3 (12.4)	21.1 (14.8)	49.2 (35.6)	267.7 (216.4)	590.0 (473.9)	0.580
R mid IJV	6.5 (2.6)	25.2 (16.5)	38.0 (29.6)	88.6 (54.8)	463.9 (280.6)	1090.1 (538.0)	0.565
L mid IJV	5.4 (2.1)	23.6 (15.9)	26.1 (20.2)	56.6 (39.3)	311.4 (235.6)	704.5 (504.2)	0.669
R lower IJV	7.5 (2.7)	25.8 (16.6)	49.3 (33.2)	89.7 (51.7)	620.9 (384.7)	1179.3 (618.8)	0.500
L lower IJV	5.8 (2.3)	27.5 (20.4)	30.7 (22.9)	60.7 (44.9)	442.7 (333.7)	881.1 (698.2)	0.444
<i>Arterial side</i>							
R upper CCA	5.8 (1.2)	41.4 (7.1)	27.3 (7.9)	27.9 (6.6)	685.0 (151.9)	685.7 (163.1)	0.999
L upper CCA	5.9 (0.8)	43.4 (7.4)	27.6 (7.7)	27.6 (7.7)	706.2 (187.4)	706.5 (188.0)	0.999
R lower CCA	5.9 (1.2)	39.7 (6.6)	28.9 (8.2)	29.7 (6.8)	701.3 (183.0)	698.8 (170.0)	0.887
L lower CCA	6.1 (0.7)	44.5 (8.3)	29.3 (7.1)	29.3 (7.1)	777.4 (205.3)	776.9 (205.1)	0.999

BFV = blood flow volume; CCA = common carotid artery; CSA = cross-sectional area; IJV = internal jugular vein; L = left; R = right; TAV = time-averaged velocity.

^{*} Correlations between methods were derived using Pearson correlation coefficients.

[†] Mean (standard deviation).

Take Home Message



- L'eziopatogenesi dell'AGT è ancora oscura, ma l'ipotesi venosa è suggestiva e verosimile per la maggioranza dei casi
- Gli US consentono di valutare l'insufficienza della vena giugulare interna (incompetenza valvolare) con affidabilità e a basso costo, e l'esame è ben tollerato
- Le indicazioni fornite da un'indagine US a carico dei vasi venosi cervicali non sono trascurabili, per cui in caso di AGT è consigliabile sottoporre il paziente a tale esame





Grazie per l'attenzione



Amnesia Globale Transitoria: il versante venoso