

DEMENZE CHIRURGICHE

Luigi Maria Cavallo



Cattedra di Neurochirurgia
(Dir. Prof. Paolo Cappabianca)
Università degli Studi di Napoli Federico II

CONVEGNO SIN CAMPANIA

Focus su novità diagnostiche e terapeutiche

Napoli, 13 dicembre 2019

Aula Magna G. Salvatore AOU Federico II, via Pansini 5, Napoli

DEMENZA...

«Perdita di abilità cognitive ed emozionali acquisite che interferiscono con la qualità della vita»



FREQUENZA RELATIVA DELLE DIVERSE FORME DI DEMENZA



■ Malattia di Alzheimer 55%

■ Mista Alzheimer - VaD 9%

■ Demenza Vascolare 25%

■ Altre demenze 9%

■ Diagnosi incerta 2%

Dementia prevention, intervention, and care

Gill Livingston, Andrew Sommerlad, Vasiliki Orgeta, Sergi G Costafreda, Jonathan Huntley, David Ames, Clive Ballard, Sube Banerjee, Alistair Burns, Jiska Cohen-Mansfield, Claudia Cooper, Nick Fox, Laura N Gitlin, Robert Howard, Helen C Kales, Eric B Larson, Karen Ritchie, Kenneth Rockwood, Elizabeth L Sampson, Quincy Samus, Lon S Schneider, Geir Selbæk, Linda Teri, Naaheed Mukadam

Demenze potenzialmente «Reversibili»

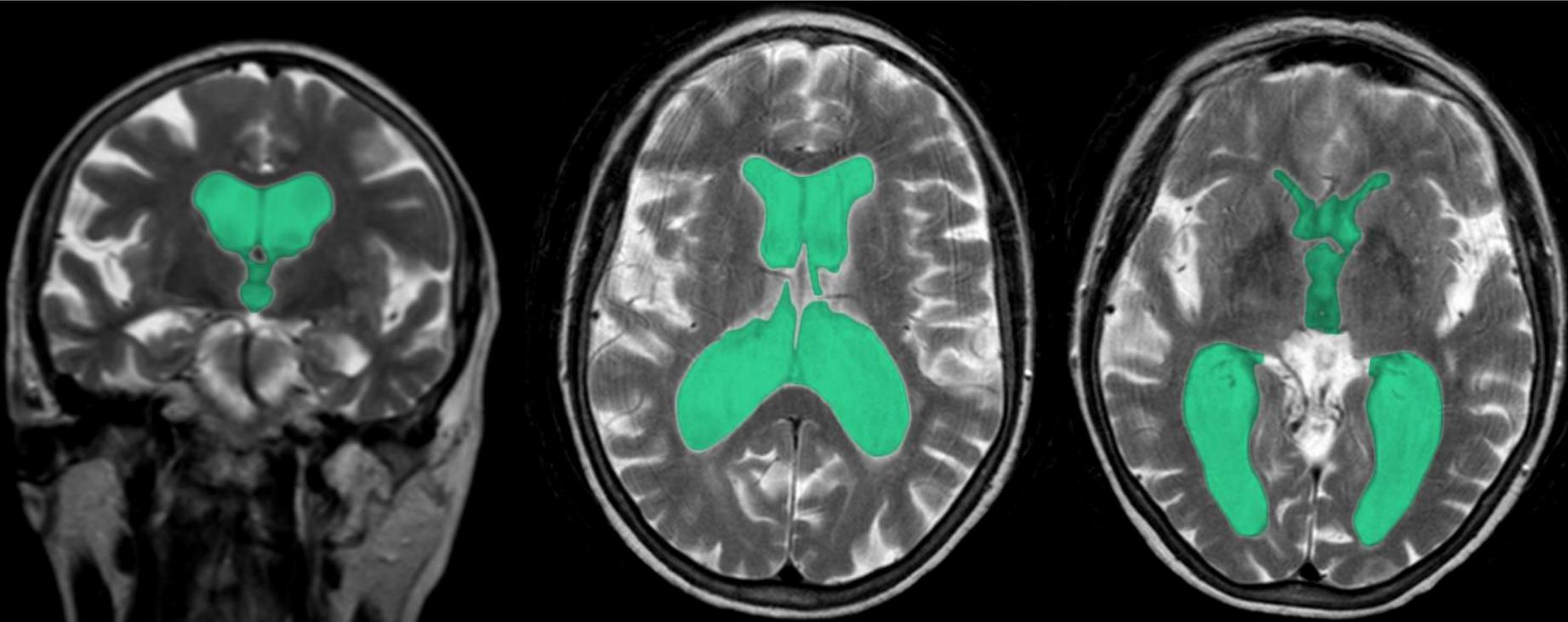
- Idrocefalo Normoteso (NPH)
- Ematoma Subdurale Cronico
- Neoplasie intracraniche

Reversible Dementias

Milta O. Little, DO

Clin Geriatr Med ■ (2018) ■-■

Idrocefalo Normoteso



Hakim S, Adams RD:

The special clinical problem of symptomatic hydrocephalus with normal cerebrospinal fluid pressure. Observations on cerebrospinal fluid hydrodynamics.

J Neurol Sci 2:307-327, 1965

Idrocefalo Normoteso: triade di Hakim Adams

- Disturbi della marcia
- Perdita del controllo dello sfintere urinario, raramente di quello fecale
- **Demenza *fronto sub-corticale*** → Sintomo tardivo
 - Rallentamento ideo-motorio
 - Difficoltà nella concentrazione e delle funzioni esecutive
 - Disturbi della memoria a breve termine
 - Apatia

Mortality and risk of dementia in normal-pressure hydrocephalus:
A population study

Daniel Jaraj^{a,b,c,*}, Carsten Wikkelsø^{a,c}, Katrin Rabiej^{a,c}, Thomas Marlow^{a,b}, Christer Jensen^d,
Svante Östling^{a,b}, Ingmar Skoog^{a,b}

Alzheimer's & Dementia ■ (2017) 1-8

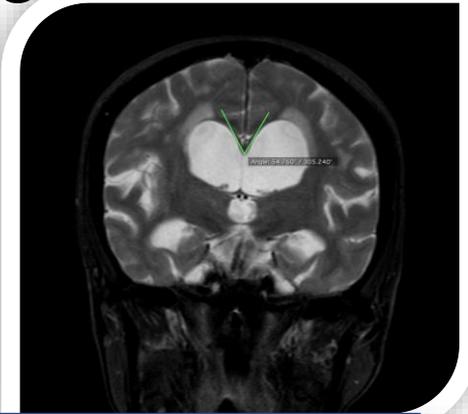
Idrocefalo Normoteso

- ✓ **Angolo Callosale Acuto** : $<80^\circ$
- ✓ *Trasudazione* transependimale

Prove dinamiche:

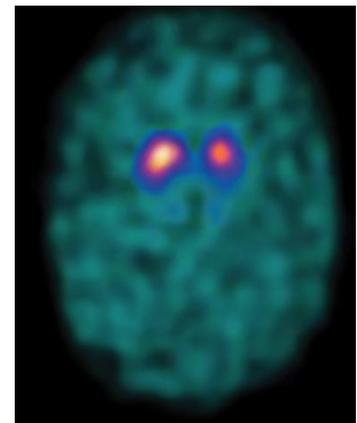
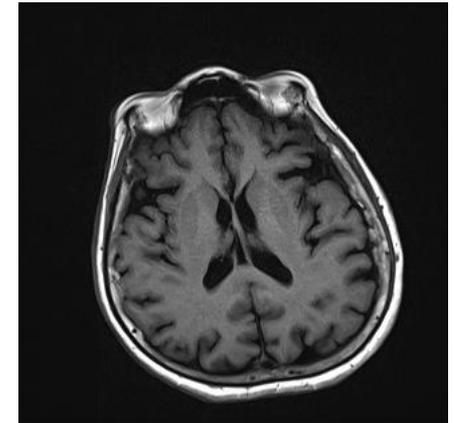
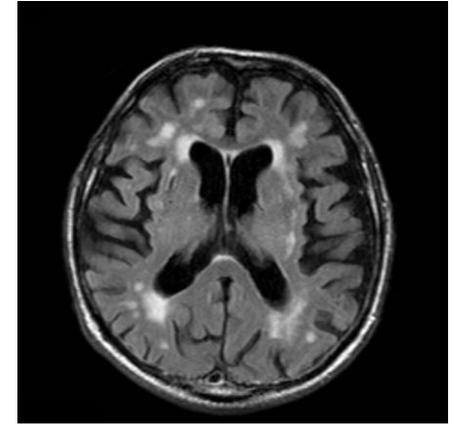
- Monitoraggio della pressione intracranica
- Perfusione liquorale (13 ± 5 mmHg /mL/min)
- Tap test

- ✓ **Flow Void**



Idrocefalo Normoteso

- Alzheimer
- Demenza da Corpi di Lewy
- Parkinson



Idrocefalo Normoteso

Valutazione pre operatoria:

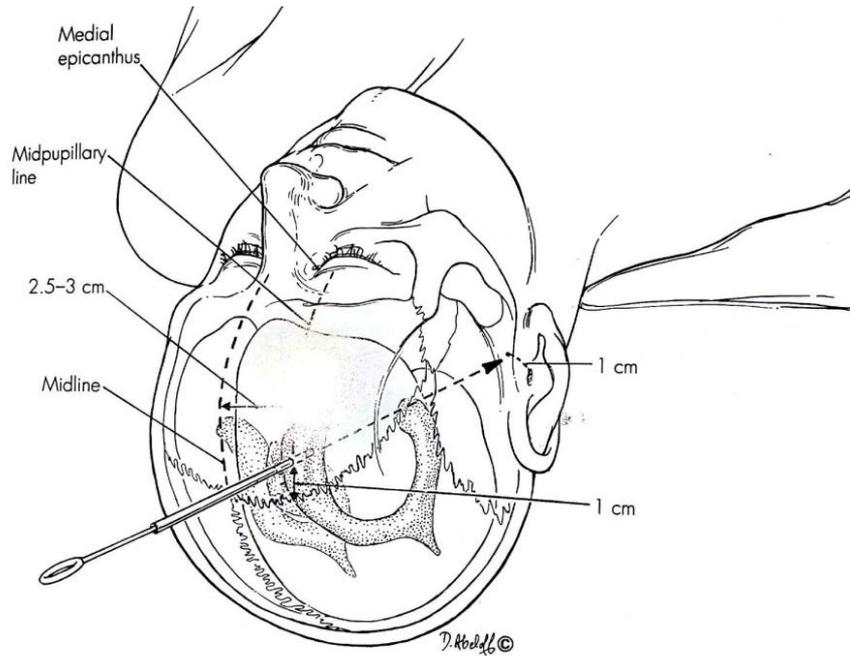
- EON
- **Milan Overall Dementia Assessment (MODA)**
- **Mini Mental State Examination**
- 3 Meter Walk Test

Idrocefalo Normoteso

Trattamento chirurgico

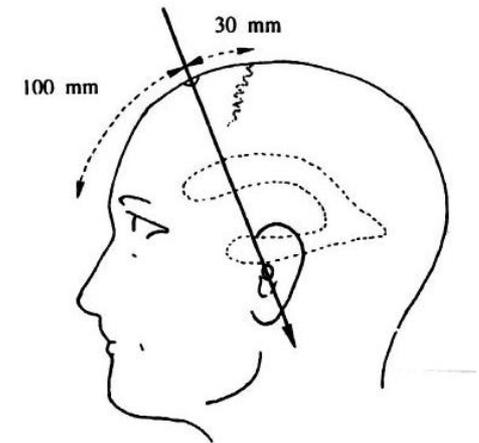
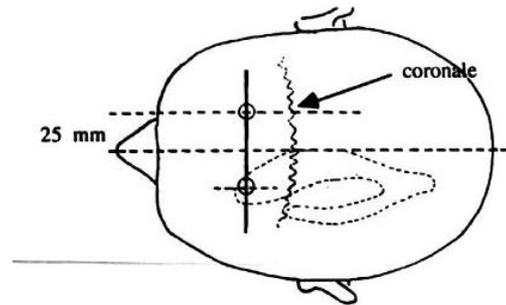
- Ventricolocisternostomia (ETV)
- Derivazione ventricolo peritoneale

ETV



LANDMARKS ANATOMICI

- Linea mediana
- Sutura Coronale
- Linea Mediopupillare
- Epicanto Mediale

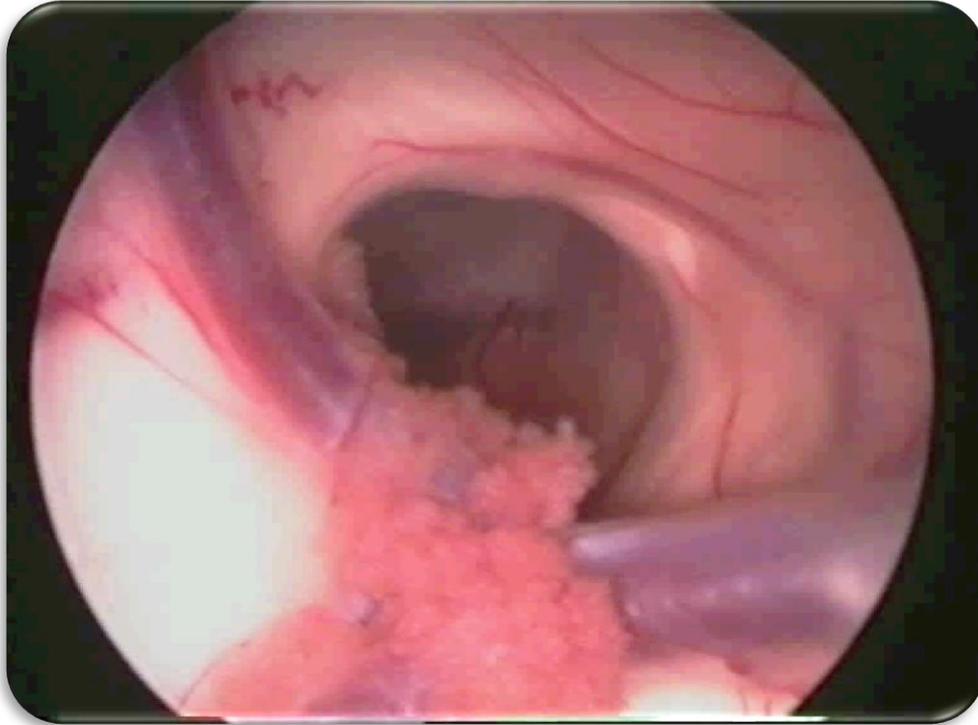


Neurosurgery. 2004 Jul;55(1):129-34; discussion 134.

Endoscopic third ventriculostomy in idiopathic normal pressure hydrocephalus.

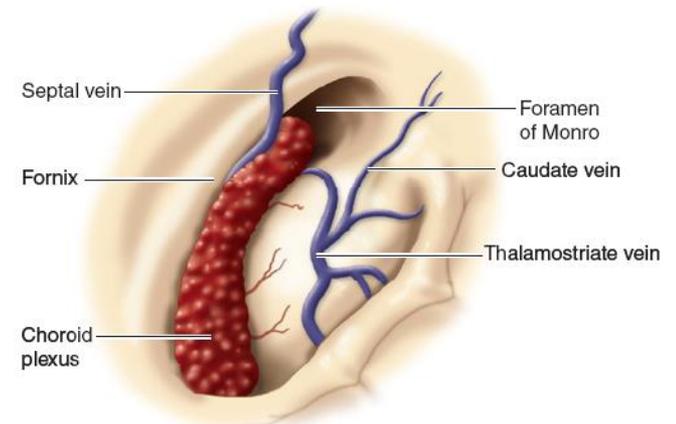
Gangemi M¹, Maiuri F, Buonamassa S, Colella G, de Divitiis E.

ETV

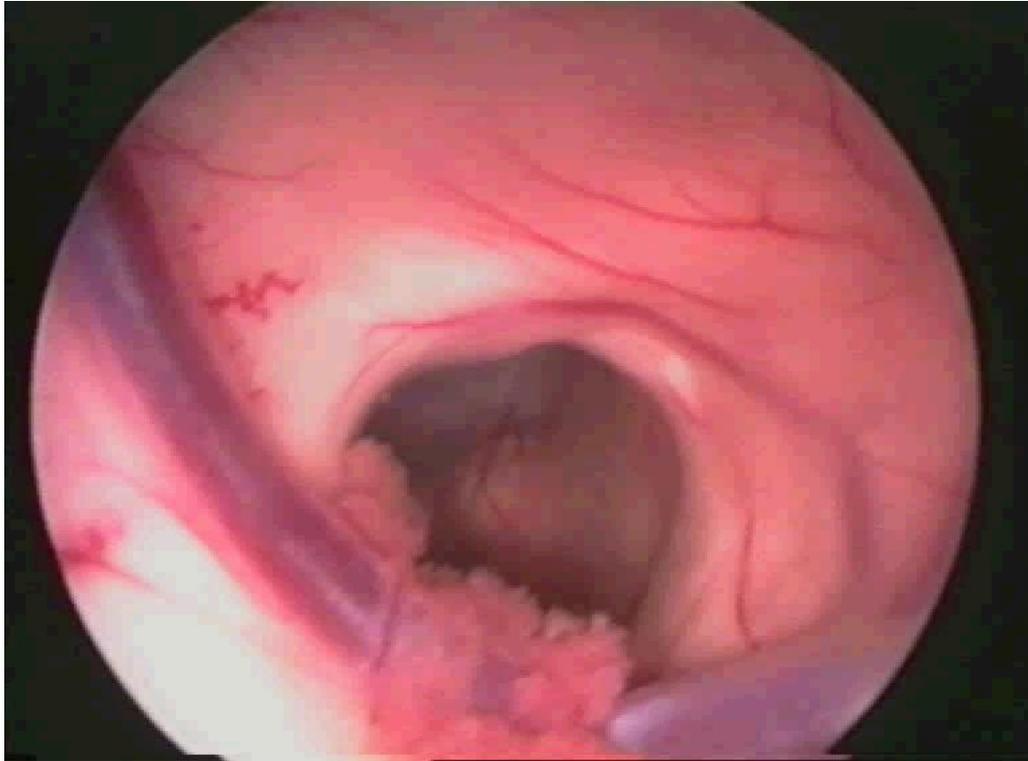


FORAME DI MONRO

1. Plesso Coroideo
2. Vena settale anteriore
3. Vena talamo-striata
4. Fornice

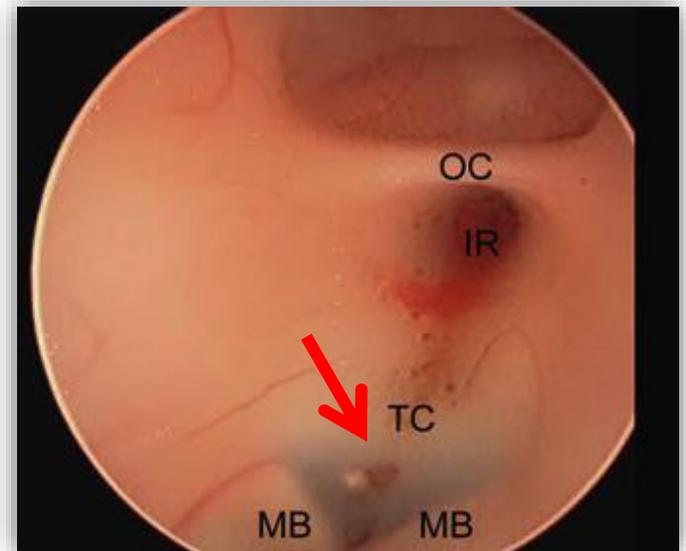


ETV

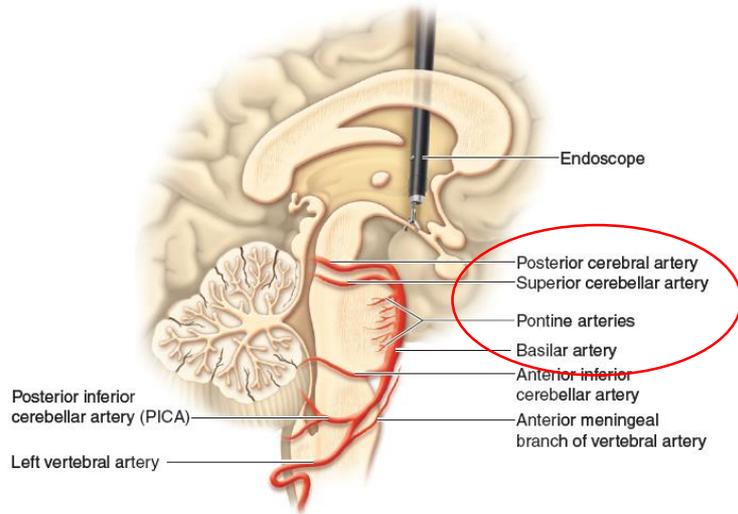


PAVIMENTO DEL III VENTRICOLO

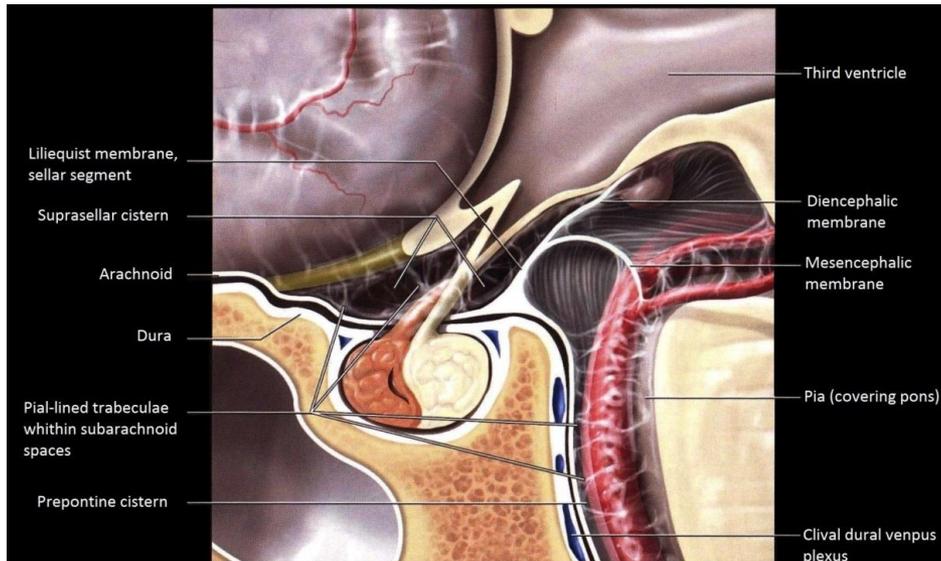
1. Corpi Mammillari (MB)
2. Recesso Infundibolare (IR)
3. *Tuber cinereum* (TC)



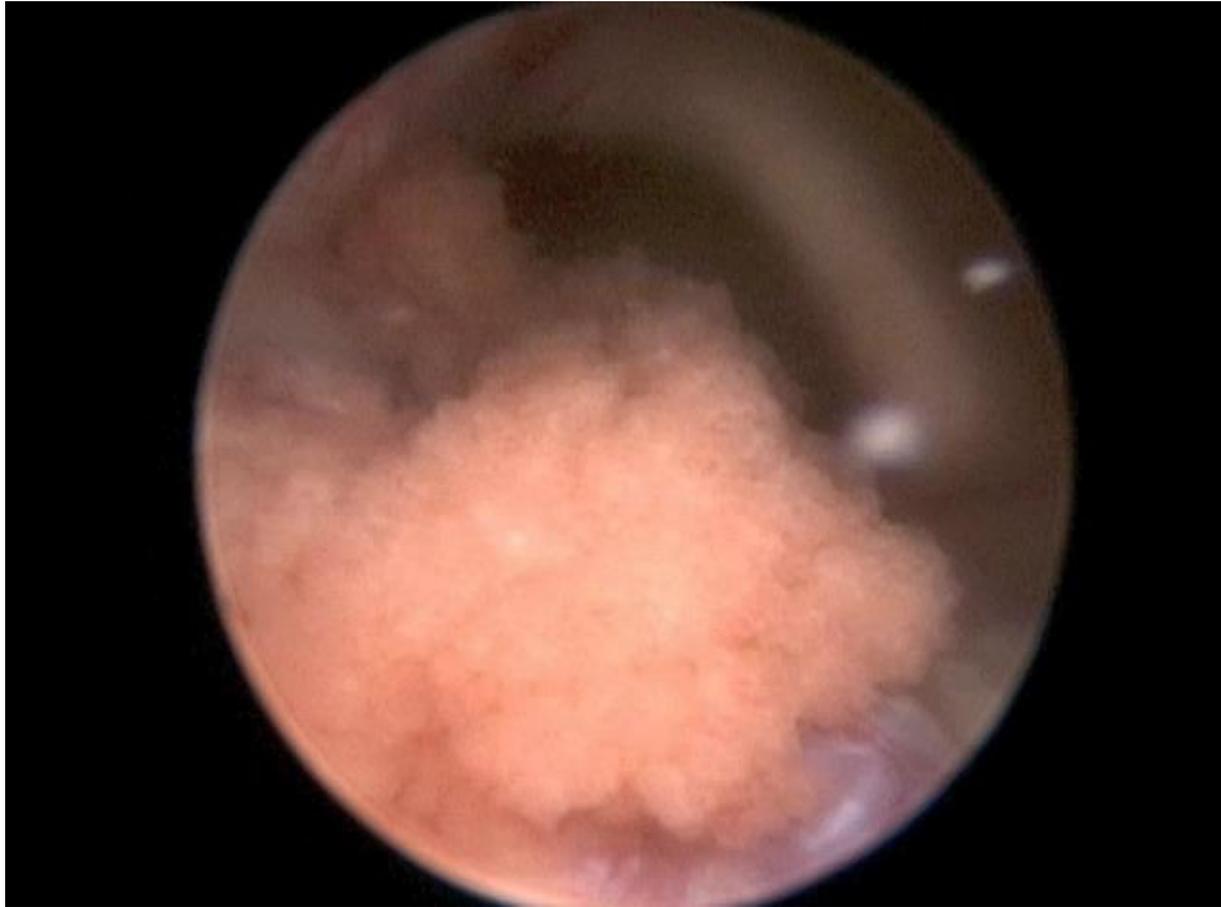
Cisterna interpeduncolare e prepontina



- Tip Basilare
- Arteria Cerebellare Sup.
- Arteria Cerebrale Post.
- Terzo Nervo Cranico
- Membrana di **Liliequist**



“FLAG SIGNAL”



ETV Complicanze

- Sanguinamento
- Paralisi del III Nervo Cranico
- Lesioni all'arteria basilare, PCA, vena talamo-striata, del fornice e dell'ipotalamo
- CSF leaks
- Infezioni

[World Neurosurg.](#) 2013 Feb;79(2 Suppl):S22.e9-12. doi: 10.1016/j.wneu.2012.02.014. Epub 2012 Feb 10.

Complications of endoscopic third ventriculostomy.

[Bouras T](#)¹, [Sgouros S](#).



Available online at www.sciencedirect.com

ScienceDirect

Surgical Neurology 69 (2008) 5–15

Endoscopy

Success and complication rates of endoscopic third ventriculostomy for adult hydrocephalus: a series of 108 patients

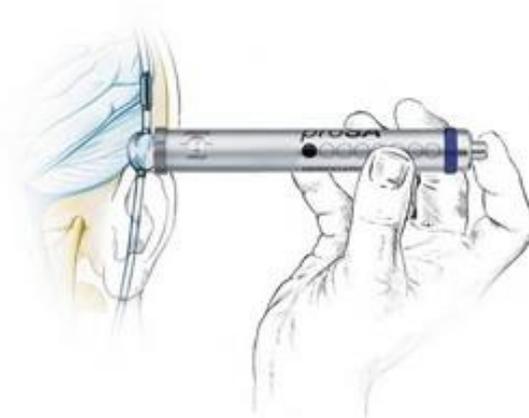
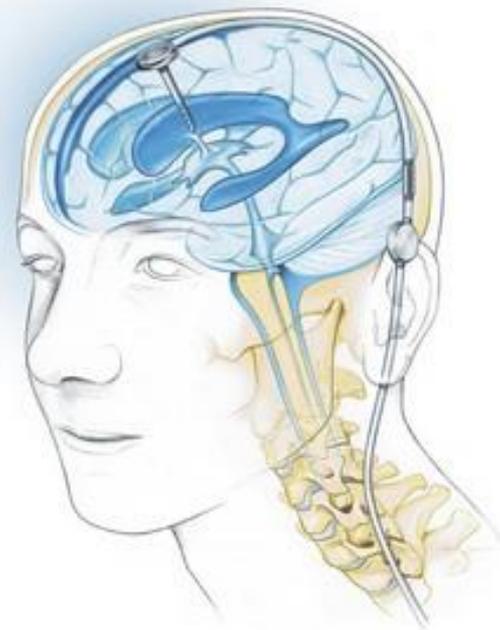
Joshua R. Dusick, MD^a, David L. McArthur, PhD, MPH^a, Marvin Bergsneider, MD^{a,b,*}

**SURGICAL
NEUROLOGY**

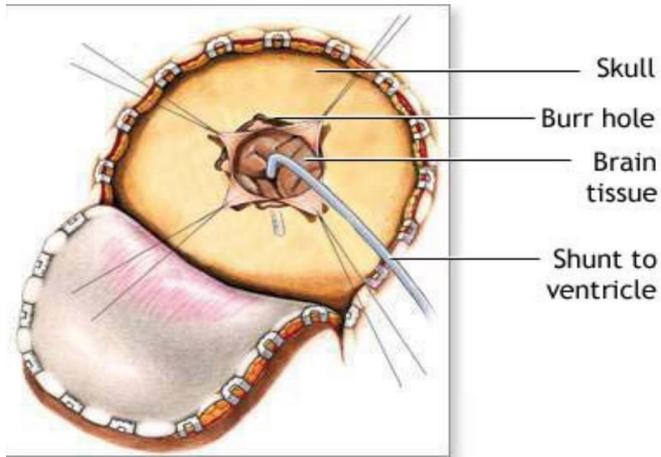
www.surgicalneurology-online.com

Derivazione Ventricolo Peritoneale

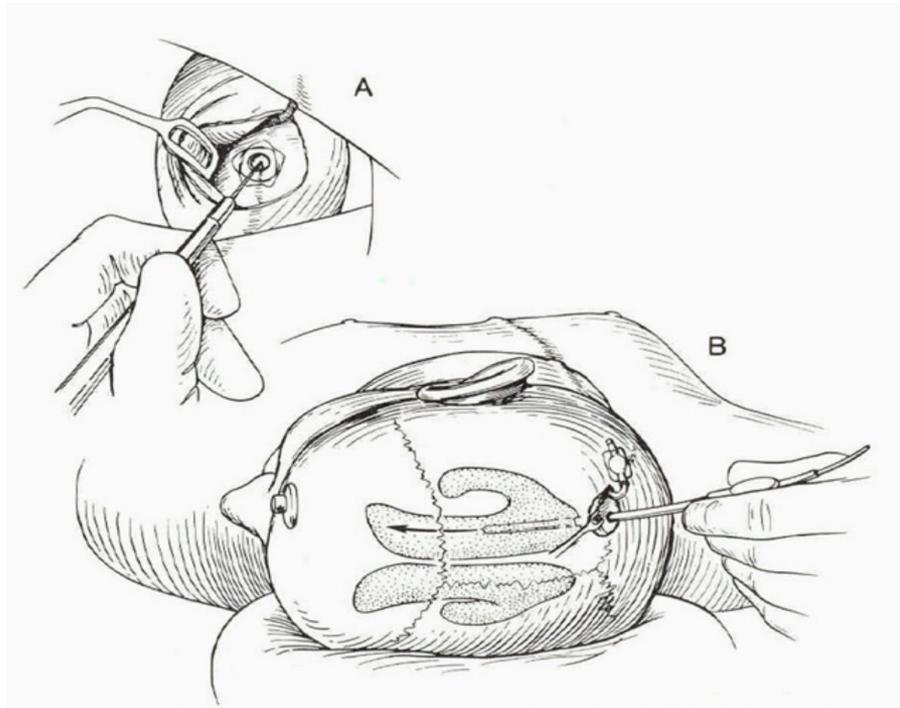
- Trattamento di Scelta
- Necessaria un'accurata selezione dei casi
- Possibile taratura valvolare esterna mediante magnete
- Controllo con RX



Derivazione Ventricolo Peritoneale

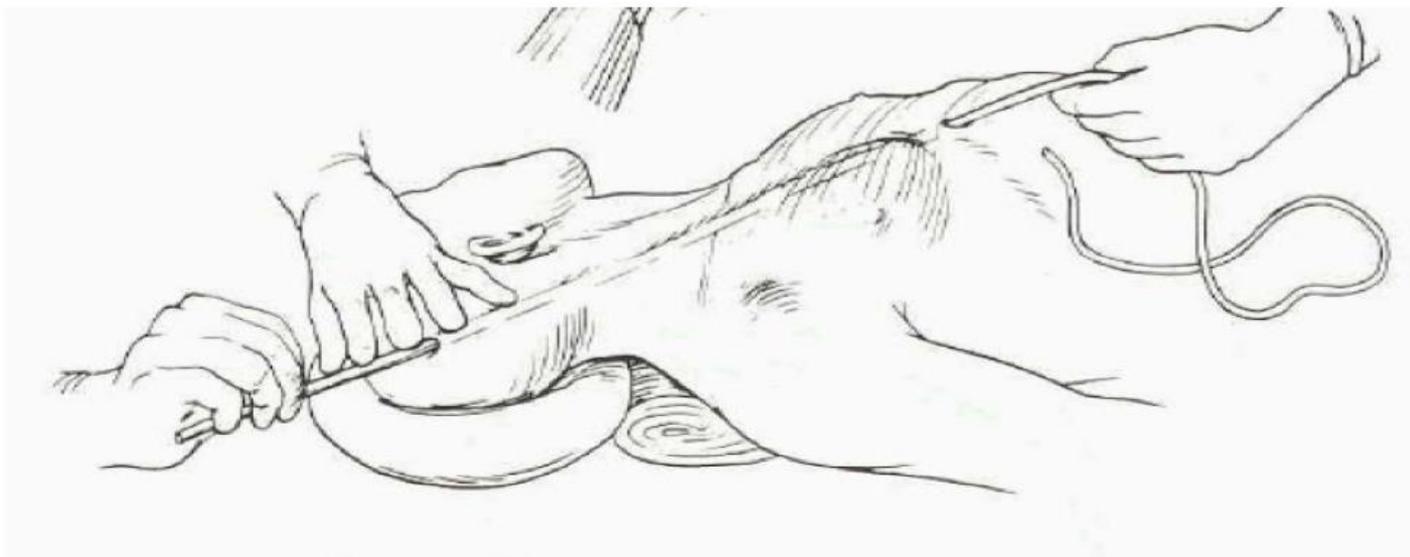


- Incisione nella regione frontale destra
- *Foro craniotomico*
- Introduzione del *catetere prossimale nel corno frontale del ventricolo laterale*



- Il catetere si connette ad una *valvola di derivazione* posizionata in genere dietro l'orecchio tarata prima dell'intervento

Derivazione Ventricolo Peritoneale



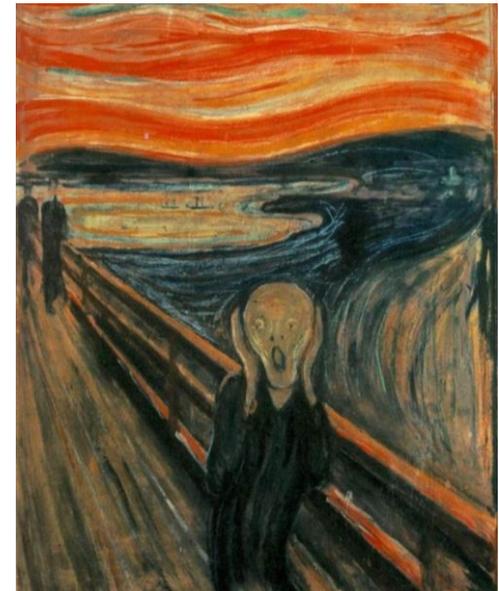
Derivazione Ventricolo Peritoneale Complicanze

- Ventricoli a fessura, ematoma sottodurale → drenaggio eccessivo
- Infezioni, CSF leaks
- Ostruzione, disconnessione o rottura
- Fuoriuscita del catetere dalla cavità peritoneale
- Perforazione di un viscere, ostruzione intestinale, peritonite
- Quarto ventricolo escluso

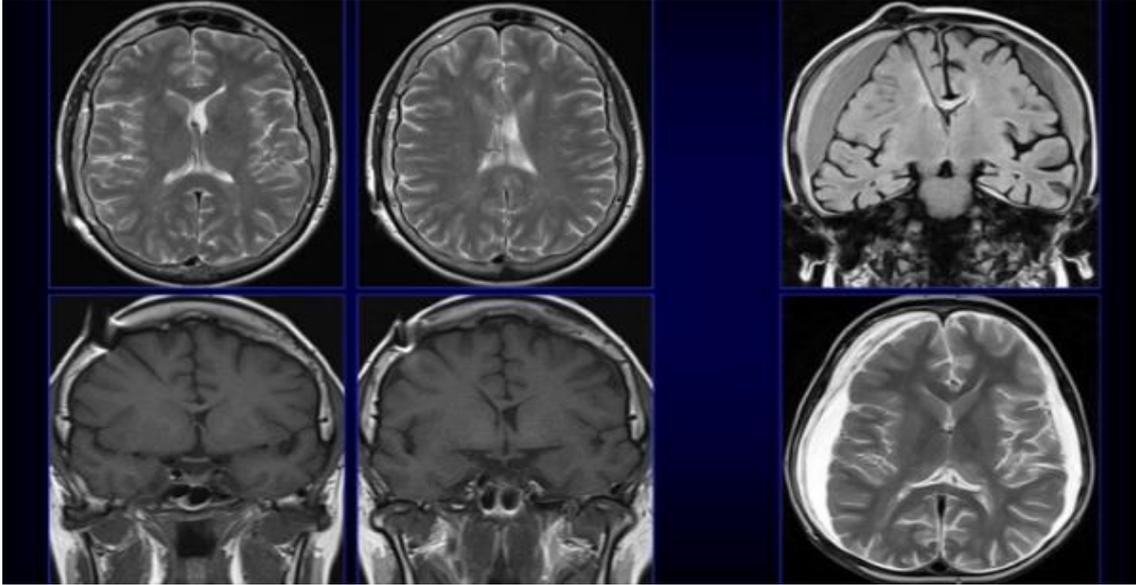
[Clin Neurol Neurosurg.](#) 2017 Mar 18;157:1-6. doi: 10.1016/j.clineuro.2017.03.014. [Epub ahead of print]

Ventriculoatrial versus ventriculoperitoneal shunt complications in idiopathic normal pressure hydrocephalus.

[Hung AL](#)¹, [Vivas-Buitrago T](#)¹, [Adam A](#)¹, [Lu J](#)¹, [Robison J](#)¹, [Elder BD](#)², [Goodwin CR](#)¹, [Jusué-Torres I](#)¹, [Rigamonti D](#)¹.



Derivazione Ventricolo Peritoneale: Complicanze



Endoscopic third ventriculostomy in the treatment of idiopathic normal pressure hydrocephalus: a review study

Anastasia Tasiou¹ • Alexandros G. Brotis^{1,4}  • Felice Esposito² •
Konstantinos N. Paterakis³
Neurosurg Rev (2016) 39:557–563

L'ETV, rispetto alla procedura di VPS, è stato associato a:

- Tasso di **Successo**
- *Maggiori* complicanze perioperatorie

61 %

12% vs 11.8%



Endoscopic third ventriculostomy for treatment of adult hydrocephalus: long-term follow-up of 163 patients

Albert M. Isaacs, MD,³ Yarema B. Bezchlibnyk, MD, PhD,³ Heather Yong,⁵ Dilip Koshy, MD,² Geberth Urbaneja, MD,¹ Walter J. Hader, MSc, MD, FRCSC,^{3,4} and Mark G. Hamilton, MD, CM, FRCSC^{1,3,4}

Long-Term ETV Treatment Outcomes

When discussing long-term outcomes for patients treated with ETV, it is important to compare these with the known results for VP shunts. Current VP shunt failure rates in adult patients still approach 15%–20% in the 1st year after treatment with first failure and repeat surgery occurring within 6–12 months.^{21,22,30} In addition, long-term follow-up of shunt-treated patients demonstrated continued significant risk of shunt failure requiring repeat surgeries.²⁷

Our results demonstrate that the long-term efficacy of ETV treatment in selected adult patients with hydrocephalus is significantly better than what can be currently achieved with VP shunts. Long-term follow-up in our population demonstrated a high probability of sustained ETV treatment efficacy with primary ETV patients rarely experiencing treatment failure after 7 months (Fig. 4). Even those patients who undergo secondary ETV do better in the long-term than shunt-treated patients, with over 60% of patients remaining shunt free at a mean follow-up of almost 10 years.

VPS Vs ETV

Il **VPS**, rispetto alla procedura di *ETV*, ha mostrato :

76,9% vs 50 %

- Migliori risultati a 12 mesi delle funzioni:
 - Neurologiche
 - Cognitive

Inferior short-term safety profile of endoscopic third ventriculostomy compared with ventriculoperitoneal shunt placement for idiopathic normal-pressure hydrocephalus: a population-based study.

Chan AK, McGovern RA, Zacharia BE, Mikell CB, Bruce SS, Sheehy JP, Kelly KM, McKhann GM 2nd

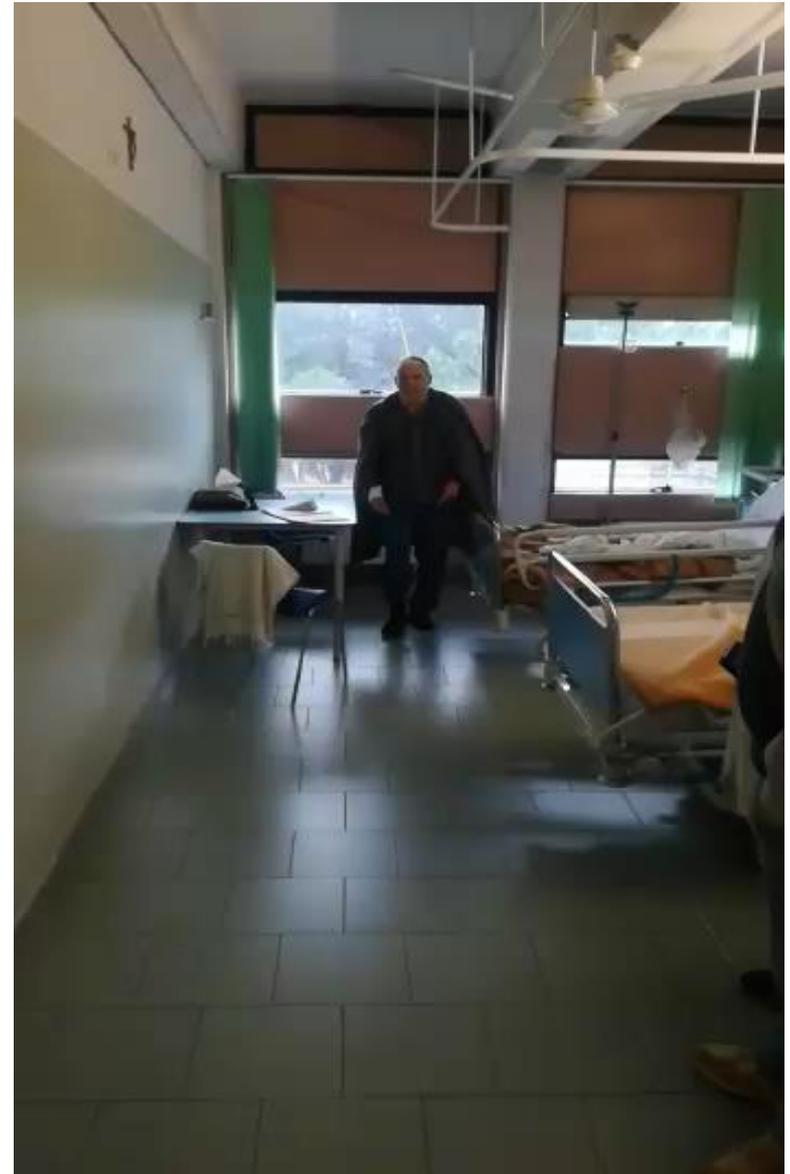
Neurosurgery. 2013 Dec;73(6):951-60

Idrocefalo Normoteso

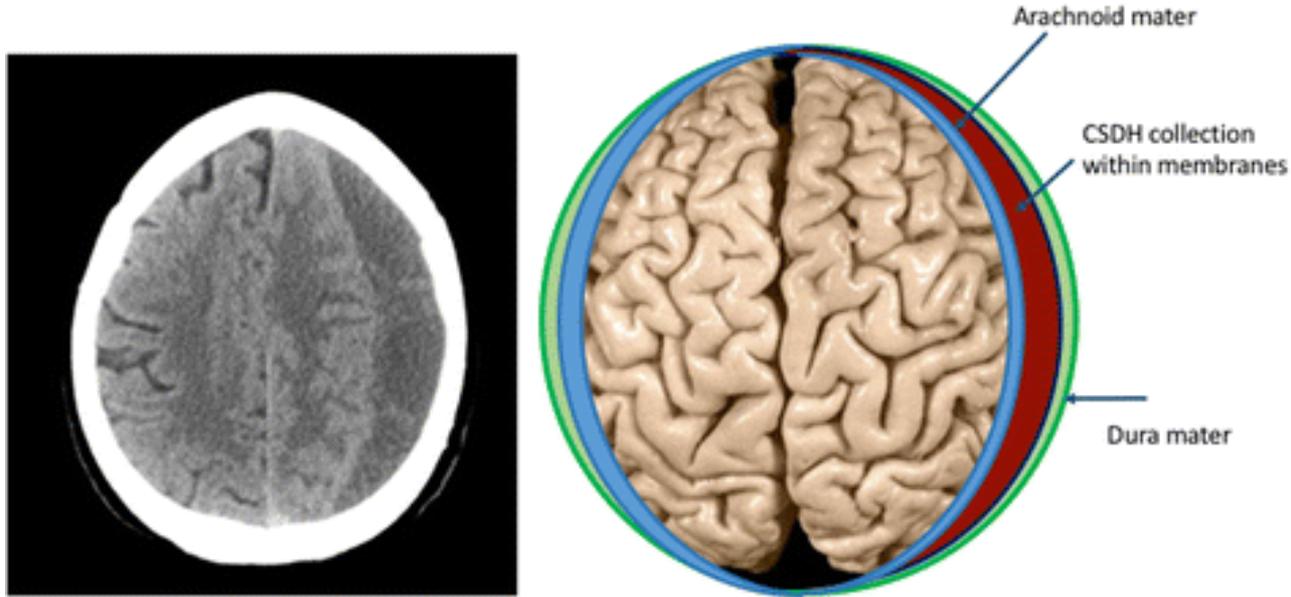
PRE-OPERATORIO



POST-OPERATORIO



Ematoma Subdurale Cronico



Reversible dementia in patients with chronic subdural hematomas

EIICHI ISHIKAWA, M.D., KIYOYUKI YANAKA, M.D., PH.D., KOICHI SUGIMOTO, M.D.,
SATOSHI AYUZAWA, M.D., PH.D., AND TADA0 NOSE, M.D., PH.D.

Department of Neurosurgery, Institute of Clinical Medicine, University of Tsukuba; and Department of Neurosurgery, Tsukuba Memorial Hospital, Tsukuba, Ibaraki, Japan **J Neurosurg** 96:680–683, 2002

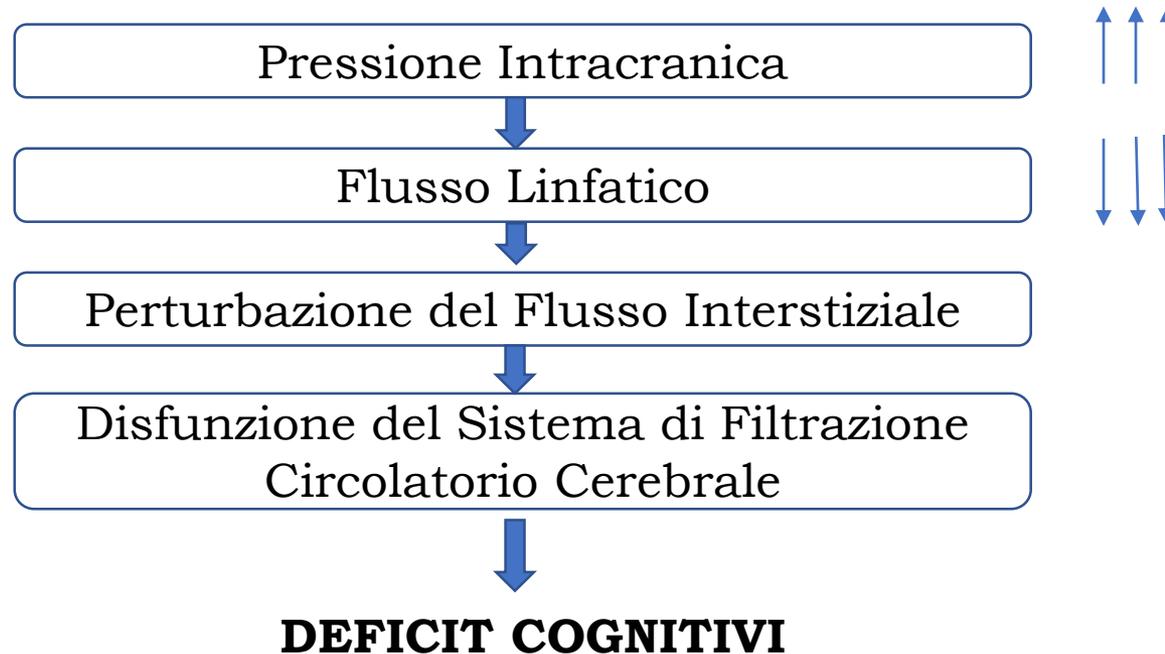
Ematoma Subdurale Cronico

- Esordio subdolo e aspecifico
- Deficit Neurologici Focali
- **Deficit cognitivi:**
 - Rallentamento ideo-motorio
 - Disturbi della memoria a breve termine
 - Rapido decadimento cognitivo

Ematoma Subdurale Cronico

Deficit cognitivi:

Connessione con il Sistema Durale Linfatico



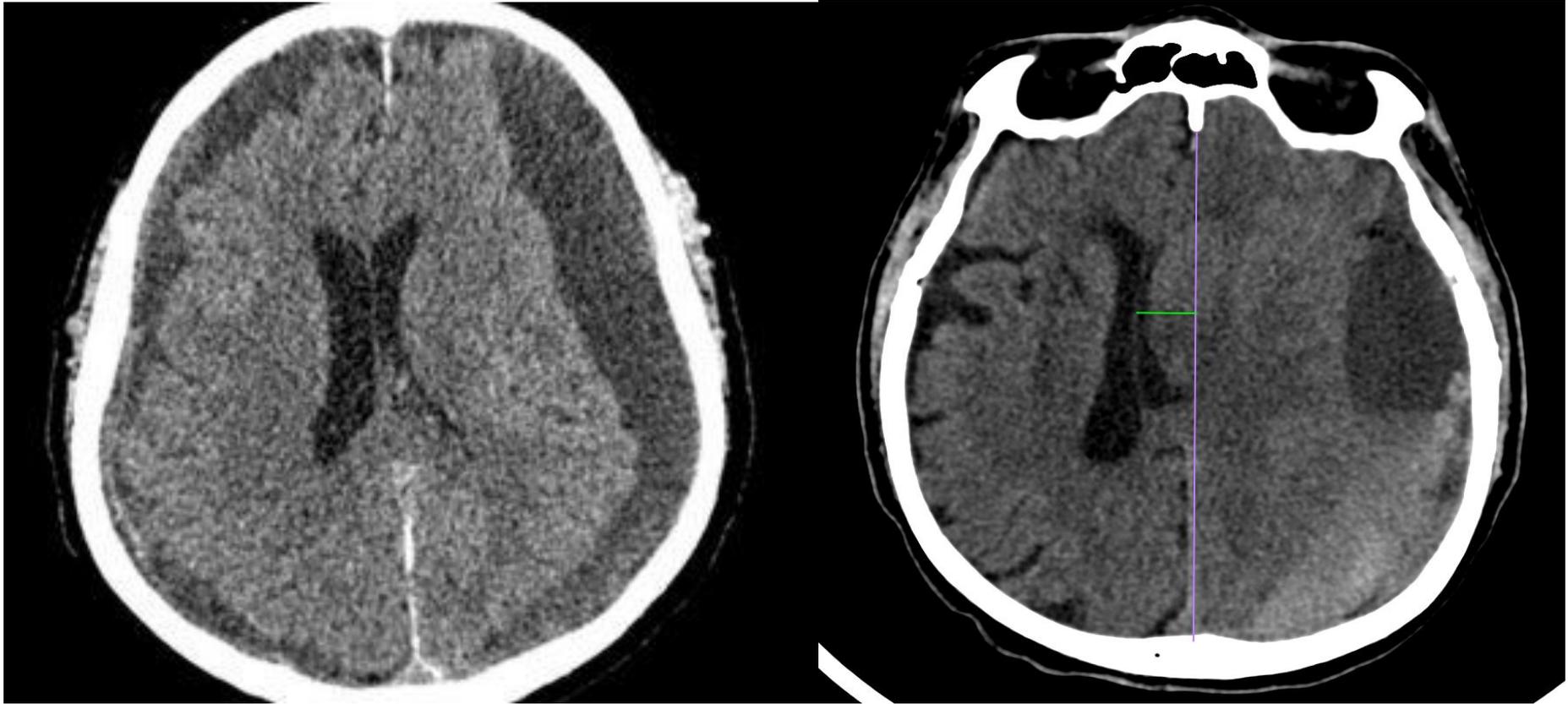
Chronic Subdural Hematoma: a Perspective on Subdural Membranes and Dementia

Ronald Sahyouni, MS^{1,2}, Khodayar Goshtasbi, BS¹, Amin Mahmoodi, BS³, Diem Kieu Tran, MD³, and Jefferson W. Chen, MD, PhD³

¹UC Irvine School of Medicine, Irvine, CA, USA

World Neurosurg. 2017 December ;

Ematoma Subdurale Cronico

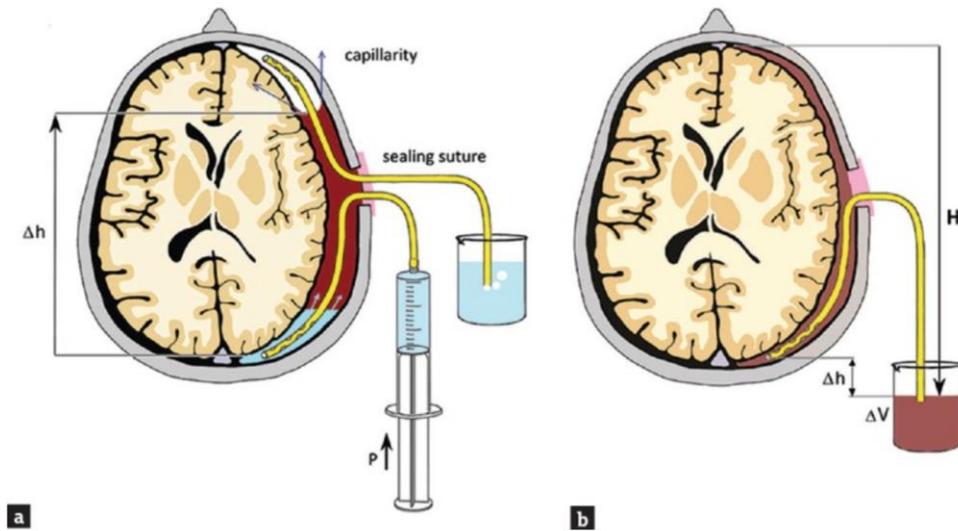


Ematoma Subdurale Cronico

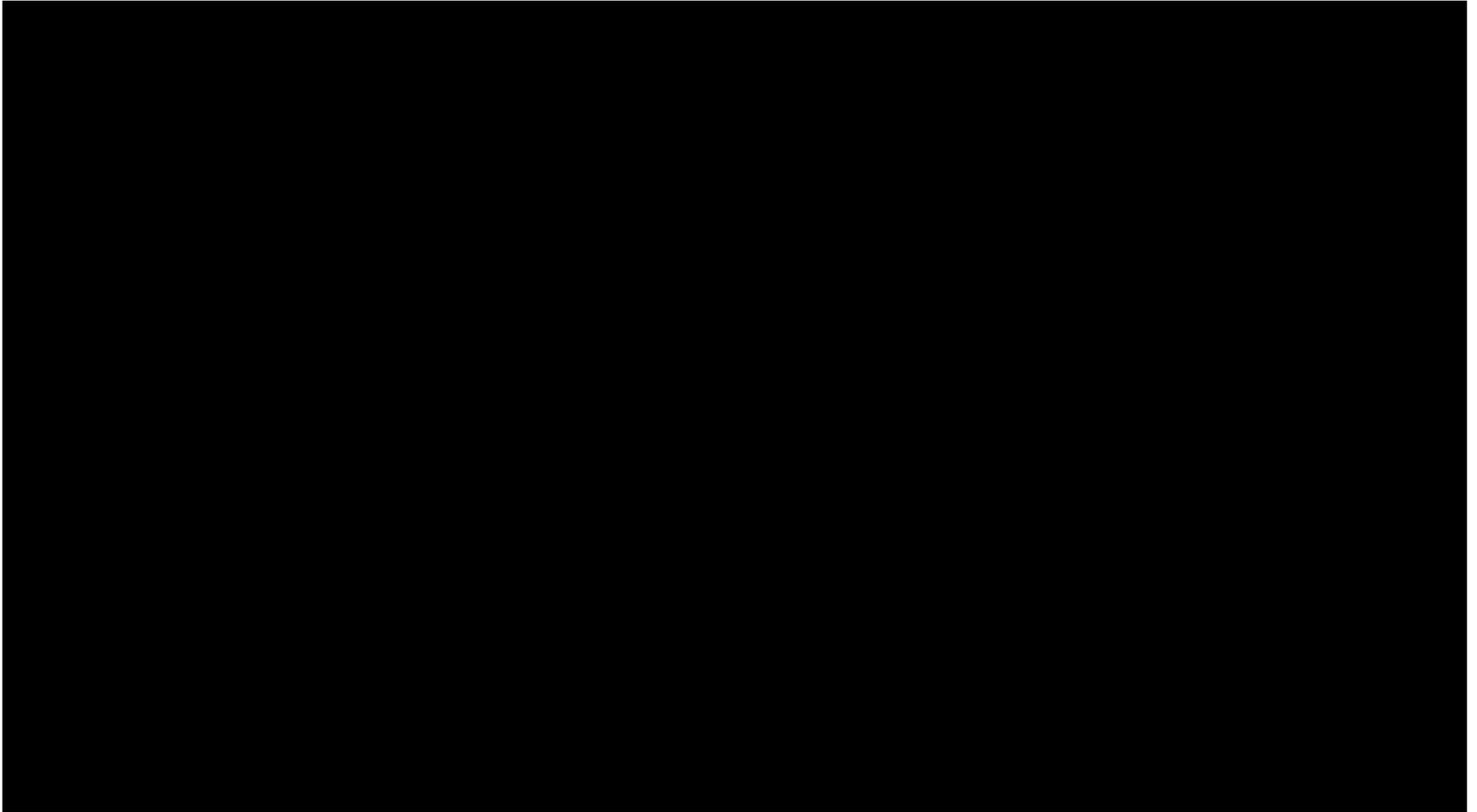
- Diminuzione del GCS score di 2 o più punti due
- *Shift* della linea mediana > 5 mm
- Spessore **massimo** dell'ematoma > di 10 mm

Ematoma Subdurale Cronico

TRATTAMENTO CHIRURGICO



Ematoma Subdurale Cronico



Ematoma Subdurale Cronico

- Perfusione cerebrale
- Recupero dei deficit Neurologici focali
- Funzioni cognitive dei pazienti

Chronic Subdural Hematoma: a Perspective on Subdural Membranes and Dementia

Ronald Sahyouni, MS^{1,2}, Khodayar Goshtasbi, BS¹, Amin Mahmoodi, BS³, Diem Kieu Tran, MD³, and Jefferson W. Chen, MD, PhD³

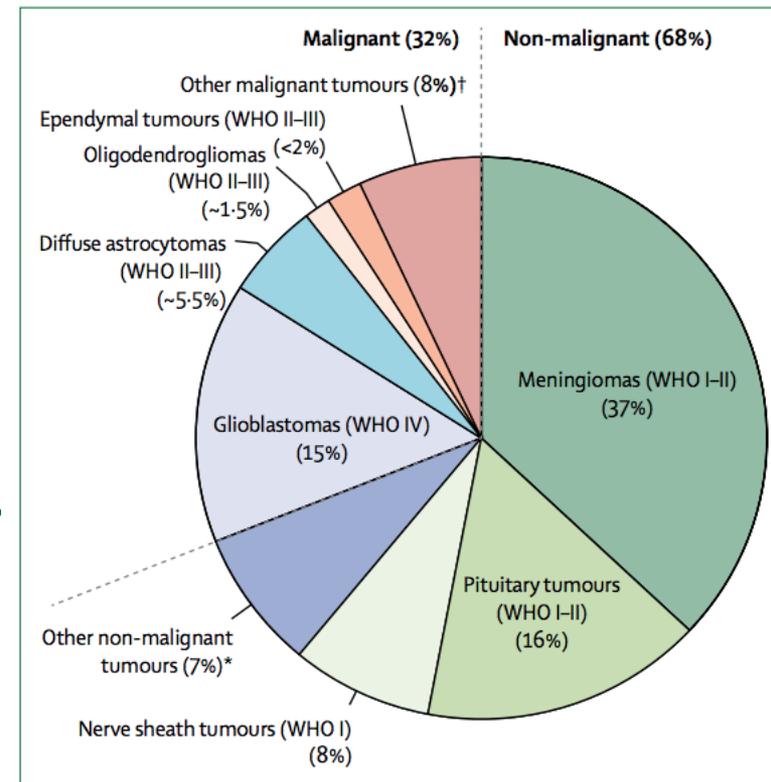
¹UC Irvine School of Medicine, Irvine, CA, USA

World Neurosurg. 2017 December ;

Neoplasie Intracraniche

L'incidenza annuale:

- Meningiomi è di 3-4:100.000.
- Gliomi è di 6-7 ogni 100.000 abitanti



Primary brain tumours in adults

Sarah Lapointe, Arie Perry, Nicholas A Butowski

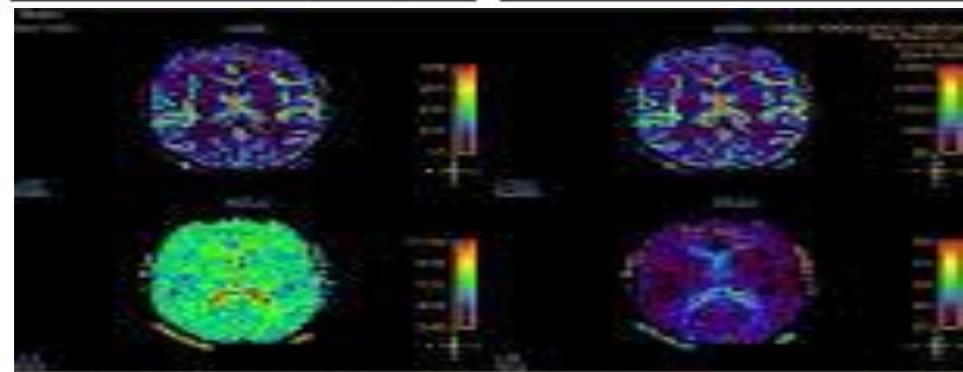
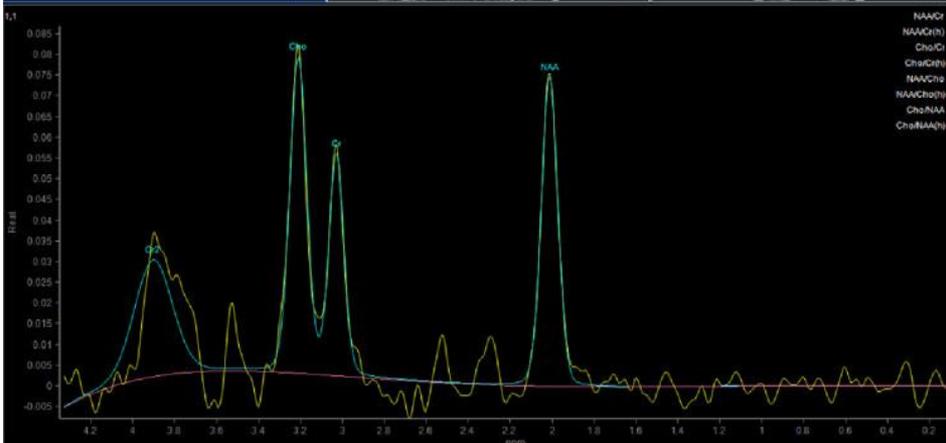
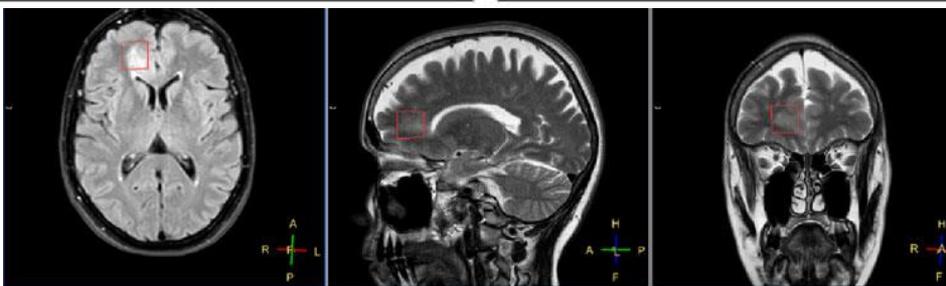
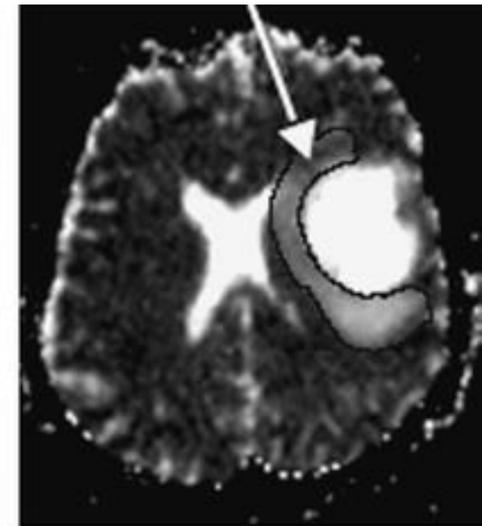
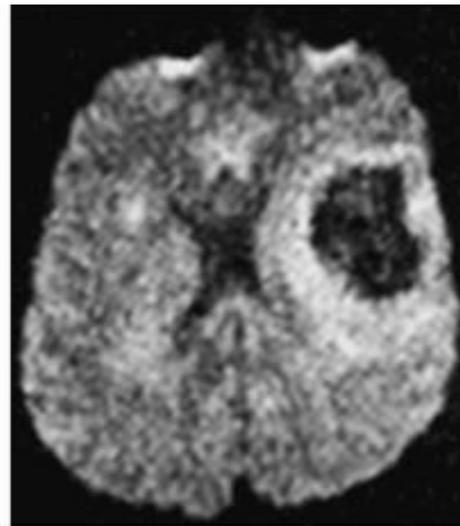
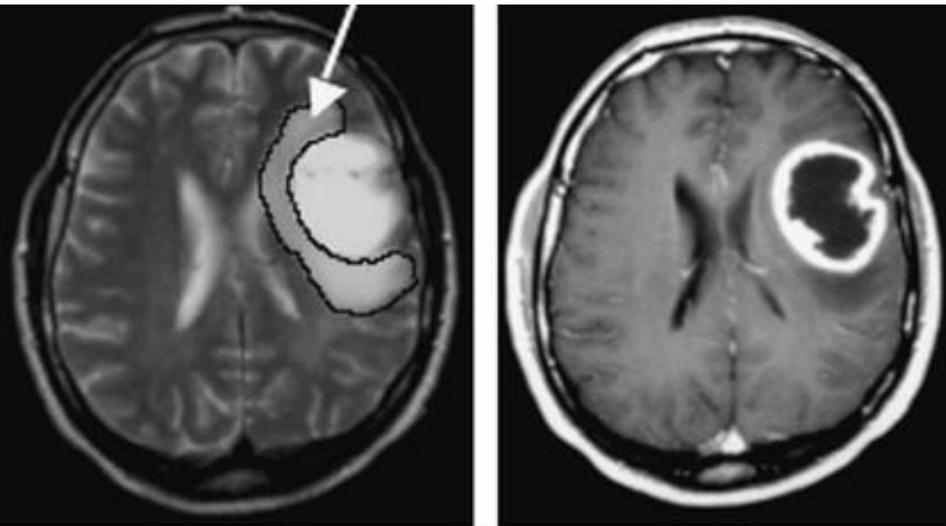
Lancet 2018; 432-46

Neoplasie Intracraniche

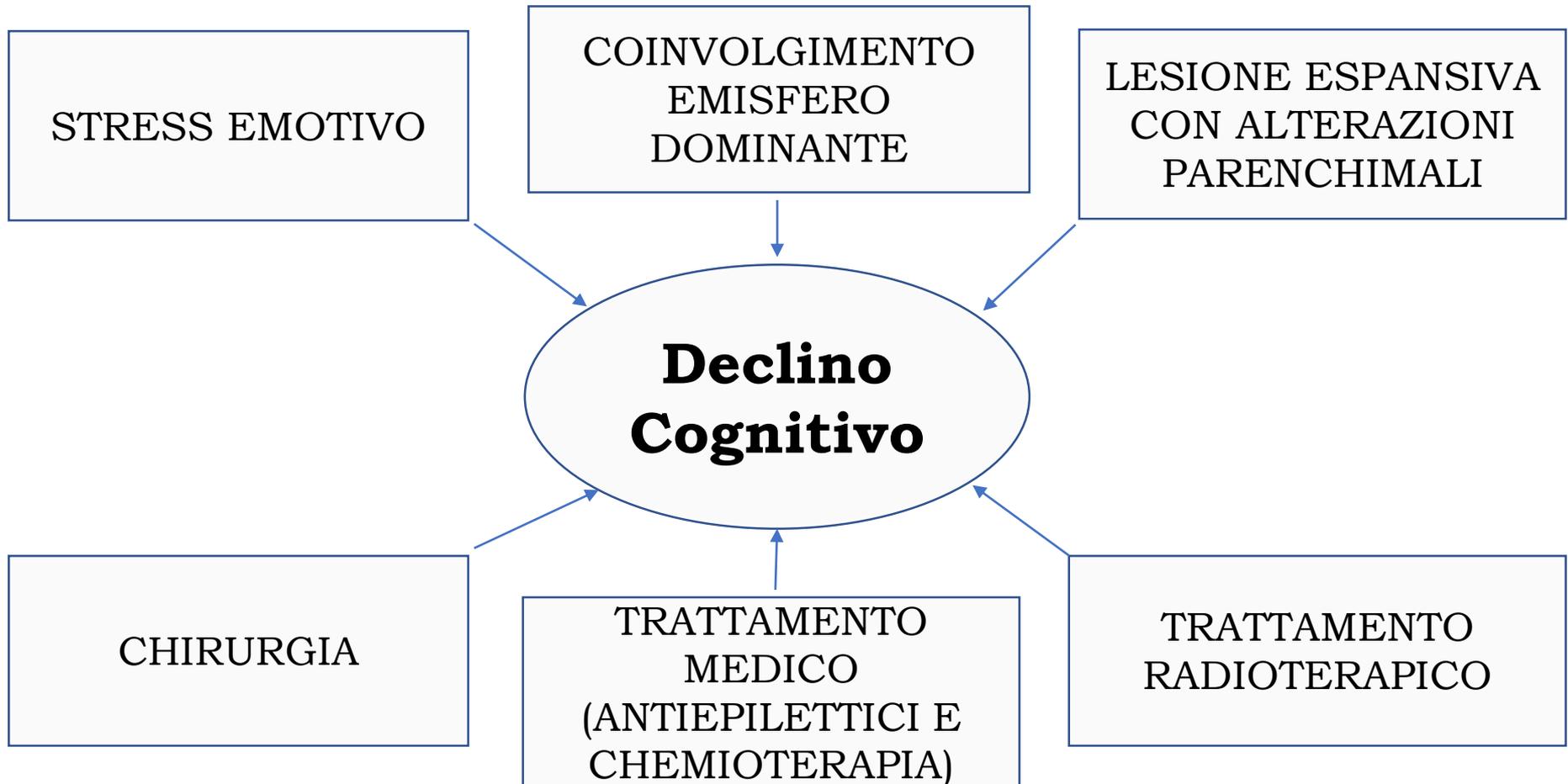
Quali tumori sono maggiormente coinvolti?

- Meningiomi
- Gliomi di basso grado
- **Gliomi di alto grado** → *Declino Cognitivo maggiore*

Neoplasie Intracraniche



Neoplasie Intracraniche



Brain tumours and cognitive deficits

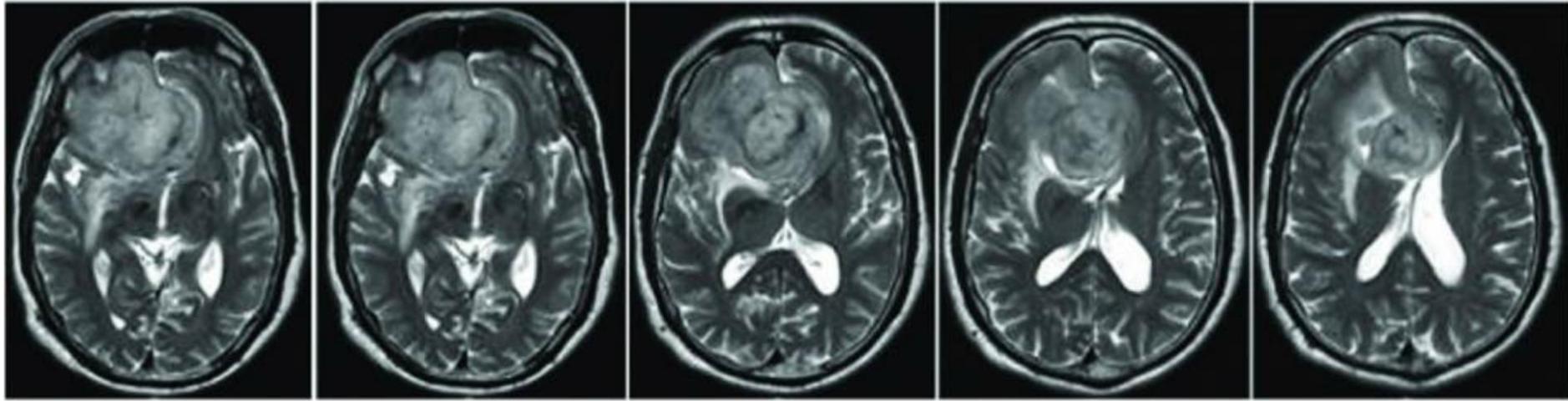
Review

Cognitive deficits in adult patients with brain tumours

Martin JB Taphoorn and Martin Klein

THE LANCET Neurology Vol 3 March 2004

Neoplasie Intracraniche: meningiomi



r

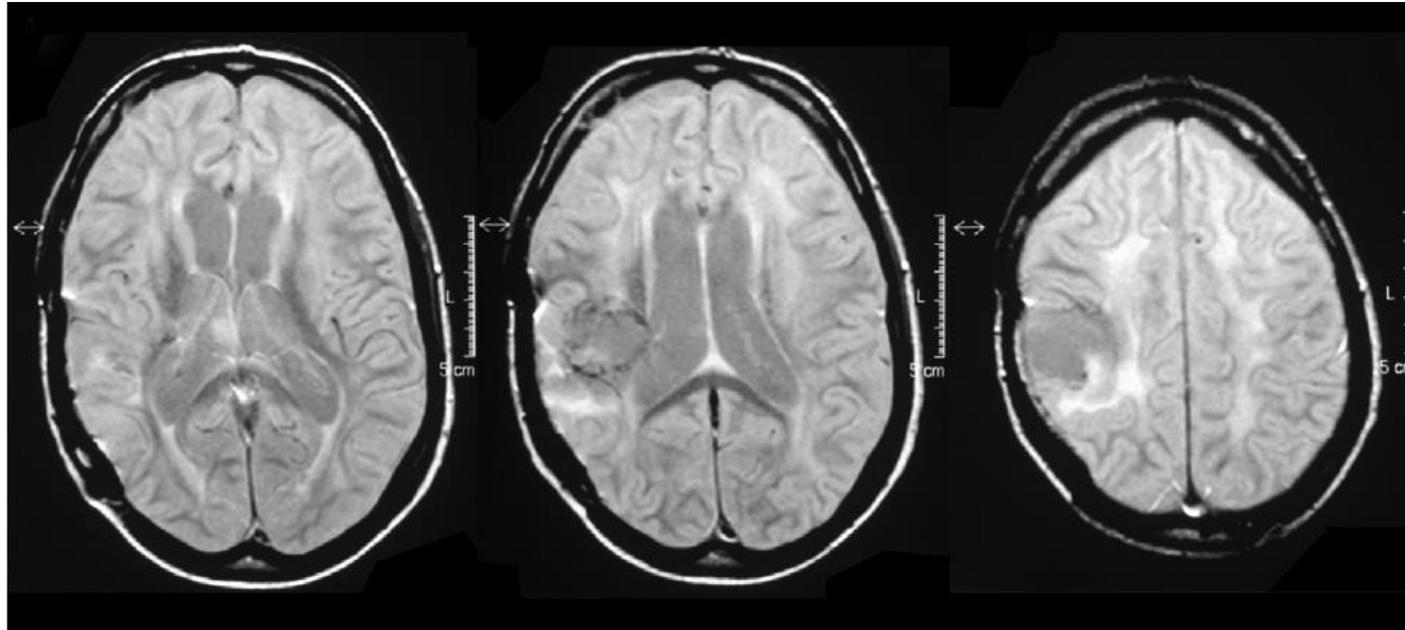
Maggiore associazione a deficit cognitivo e cambio dell'umore:

- M. della Doccia Olfattoria
 - M. del *Planum* Sfenoidale
- *Working Memory*
 - Attenzione
 - Funzioni esecutive

Cognitive functioning in meningioma patients: a systematic review

Ikram Meskal¹ · Karin Gehring^{1,2} · Geert-Jan M. Rutten² · Margriet M. Sitskoorn¹
J Neurooncol (2016) 128:195–205

Neoplasie Intracraniche: gliomi di basso grado



Gliomi
Sopratentoriali

- Rallentamento ideo-motorio
- *Impairment* dell'attenzione selettiva e divisa
- *Deficit* nei domini psicologici del HRQL

Health-related quality of life and cognitive functioning in adult patients with supratentorial WHO grade II glioma: status prior to therapy

Maximilian I. Ruge · Josef Ilmberger ·

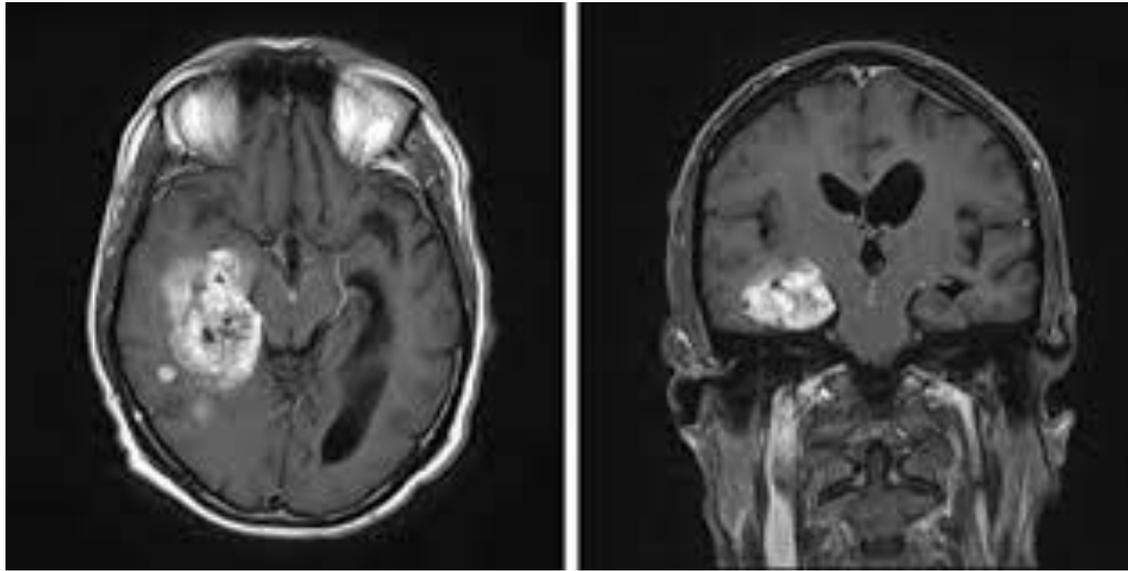
Jörg-Christian Tonn · Friedrich-Wilhelm Kreth

Received: 25 May 2010 / Accepted: 11 August 2010 / Published online: 5 September 2010

© Springer Science+Business Media, LLC. 2010

J Neurooncol (2011) 103:129–136

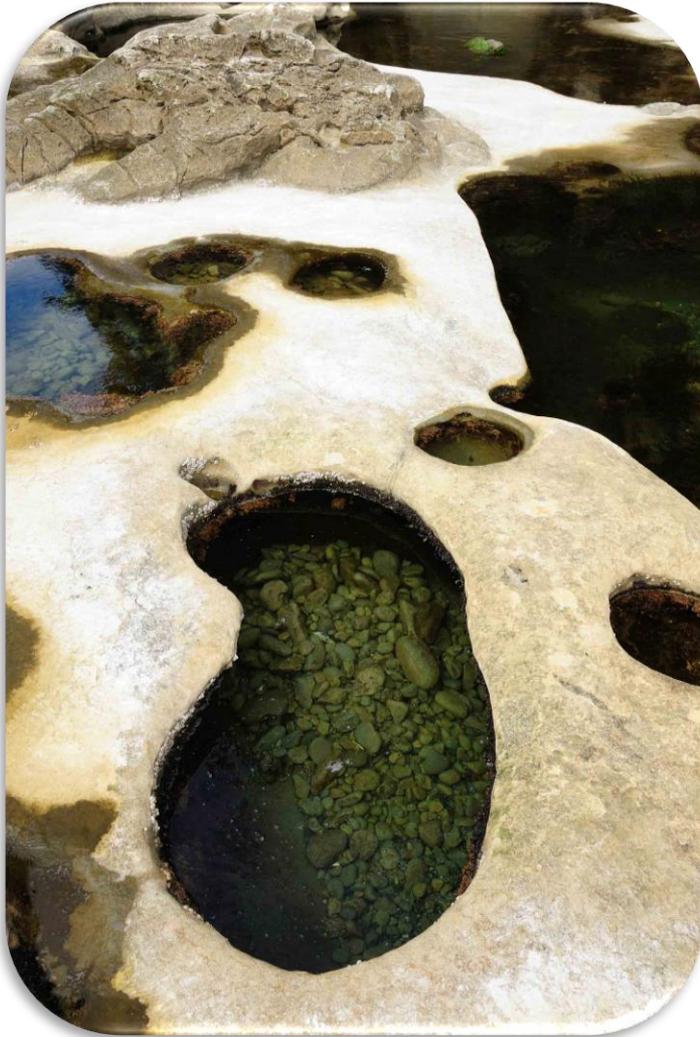
Neoplasie Intracraniche: gliomi di alto grado



- I segni di *Ipertensione Endocranica* e i *deficit Neurologici* causati dalla **rapida crescita** possono **mascherare** il deficit cognitivo
- La **funzione cognitiva** è un fattore prognostico nella sopravvivenza dei pazienti affetti da Gliomi
- **Diaschisi** → Alterazioni del *metabolismo neuronale* per la natura tipicamente **infiltrativa**

Neoplasie Intracraniche: gliomi di alto grado

DIASCHISI



Alterazioni del *metabolismo*
*neuronal*e per la natura
tipicamente **infiltrativa** che
comportano *alterazioni* di
strutture **collegate**
funzionalmente ma
anatomicamente distanti

Trattamento Radioterapico

- Encefalopatia **acuta**: < 2 settimane:

REVERSIBILE

Danno di Barriera : Edema Cerebrale

- Encefalopatia ad *onset* ritardato **precoce**: tra 1 e 6 mesi:

PARZIALMENTE REVERSIBILE

Edema e Demielinizzazione reversibile

- Encefalopatia ad *onset* ritardato **tardivo**: > da 12 mesi ad anni:

IRREVERSIBILE

Danno Gliale e Vascolare

Whole Brain VS Radioterapia Focale

- Maggiore rispetto per il parenchima sano
- Incidenza di leucoencefalopatia diffusa ↓
- Demielinizzazione degli oligodendrociti e perdita di cellule endoteliali ↓

Cognitive deficits in adult patients with brain tumours

Martin JB Taphoorn and Martin Klein

Conclusioni

- Demenze a *early onset*
- *Necessità di diagnosi e trattamento precoce*
- *Approccio Multidisciplinare*



