



Dipartimento di Morfologia, Chirurgia  
e Medicina Sperimentale



UNIVERSITÀ  
DEGLI STUDI  
DI FERRARA  
- EX LABORE FRUCTUS -

# E SE IL LIQUOR NON CIRCOLASSE?

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# Materiali e Metodi

- Per questa review sono stati analizzati 80 articoli, di cui ne sono stati selezionati 10.



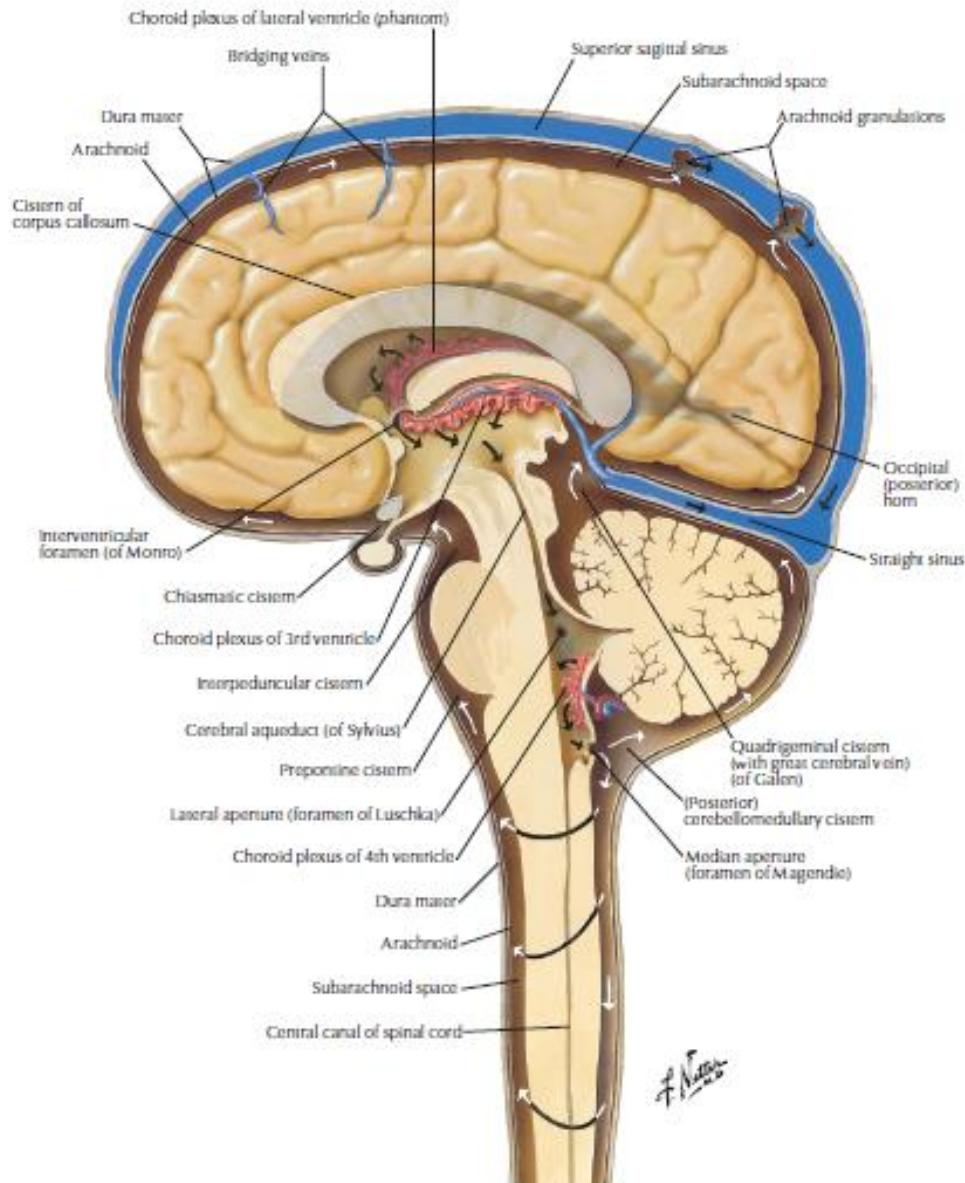


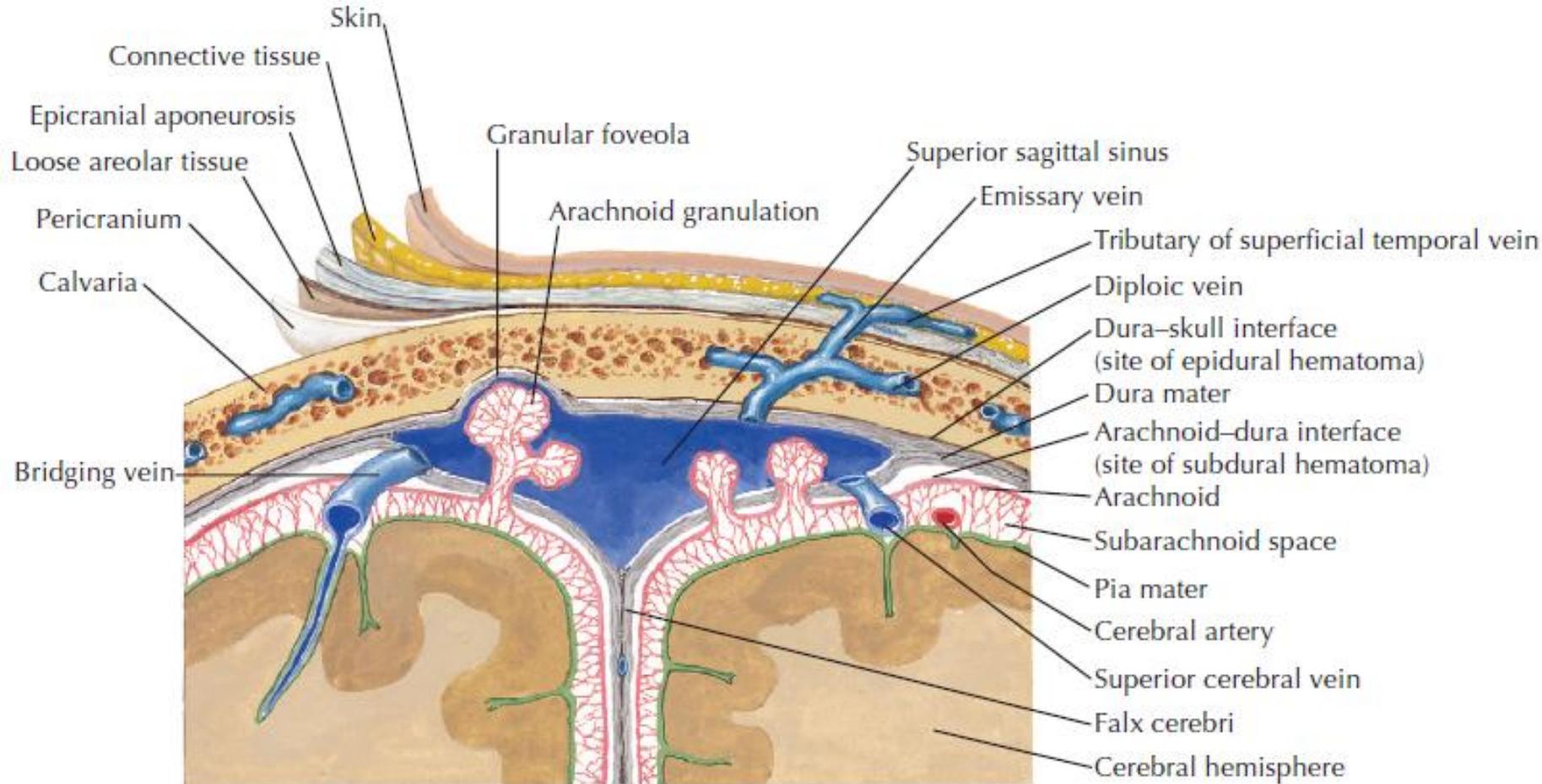
# LO STATO DELL'ARTE

80% plessi corioidei  
20% ependima

Velocità di formazione 0.3-0.4 ml/min

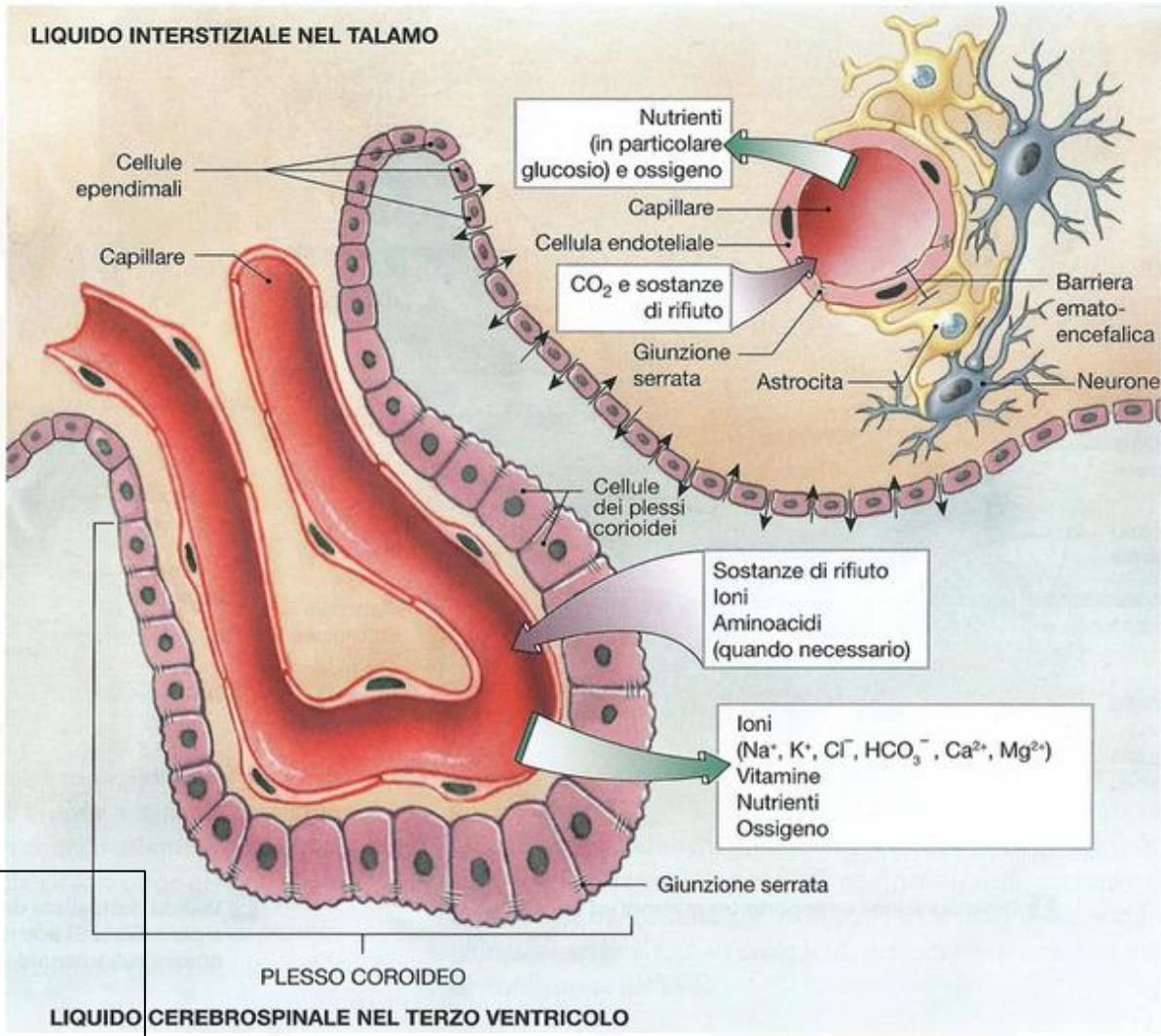
Volume totale 90-150 ml  
(nell'adulto)







### LIQUIDO INTERSTIZIALE NEL TALAMO



35-45 cm H<sub>2</sub>O (decubito seduto)

15-20 cm H<sub>2</sub>O (decubito laterale)

Proteine 20-30 mg/dL

Glucosio 40-70 mg/dL (60

-70% glicemia)

Cloruri 700-70 mg/dL



# Il contesto storico

1987 Davson et al

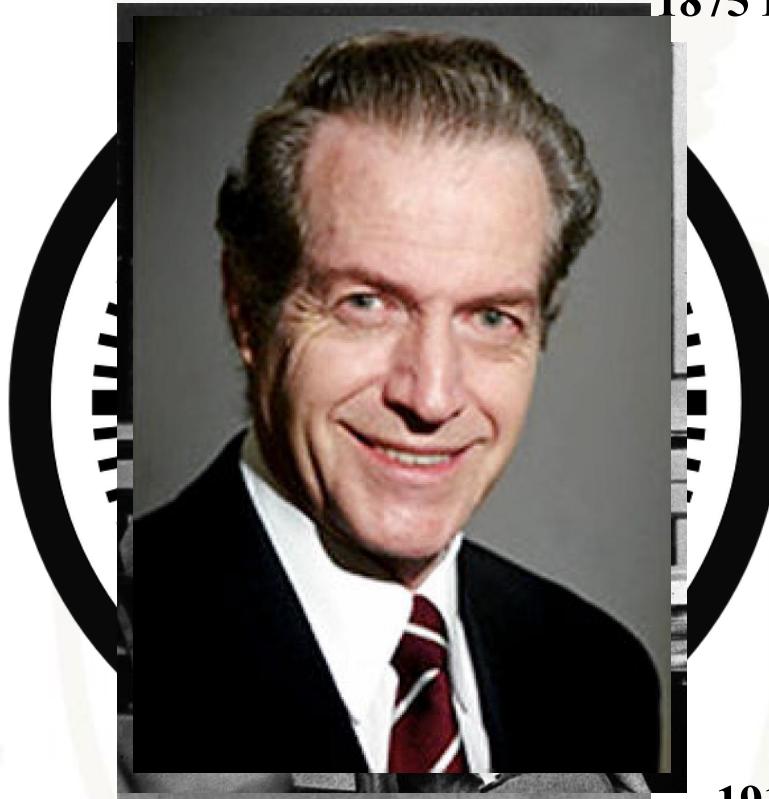
1875 Key e Retzius

1970 Milhorat

1913 Dandy

1925 Cushing

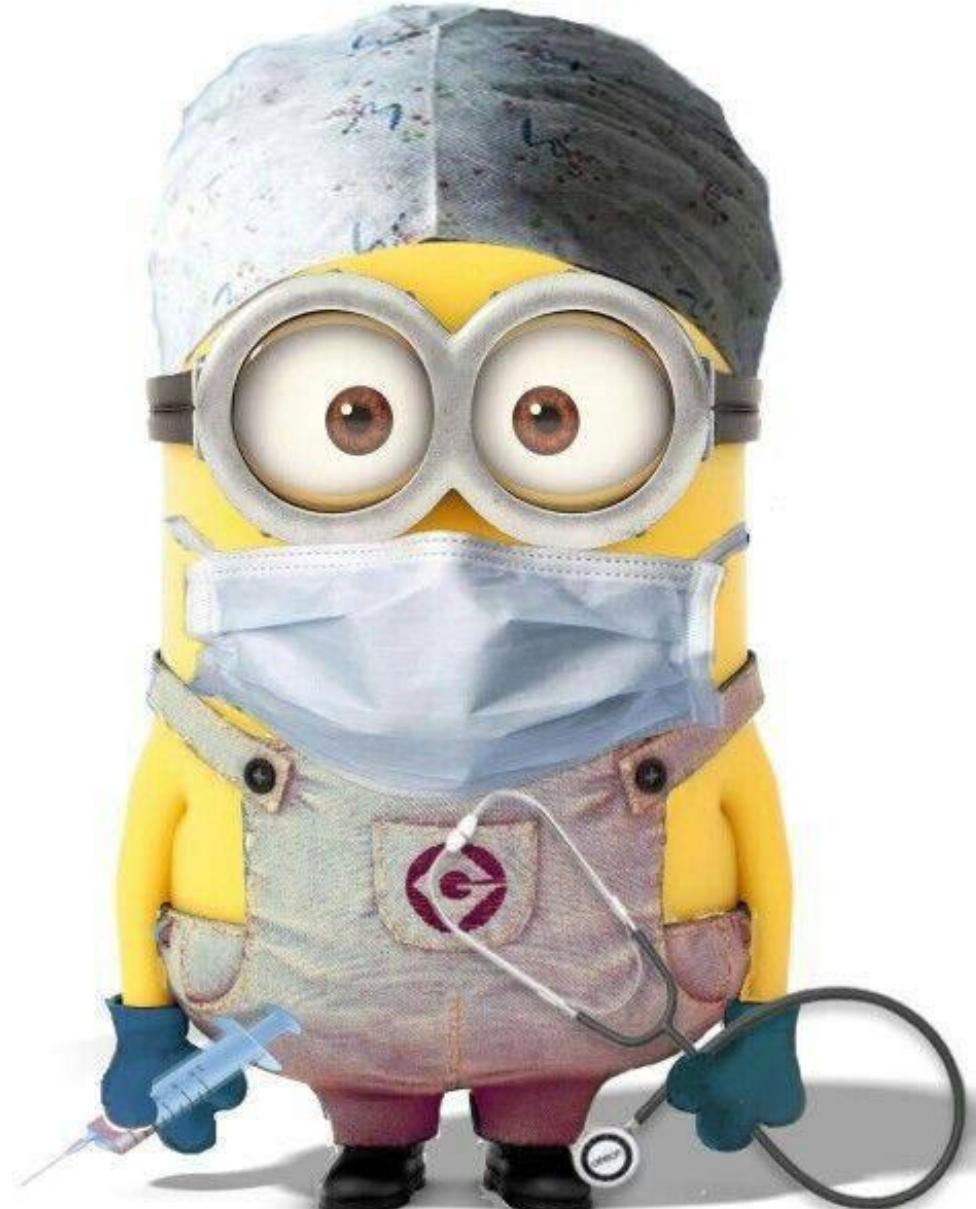
1914 Weed





E se le cose non stessero proprio così?

## NUOVI RISULTATI



# *...a fact or an illusion?*

Oreskovic, 2002

Incannulamento aquedotto  
mesencefalico

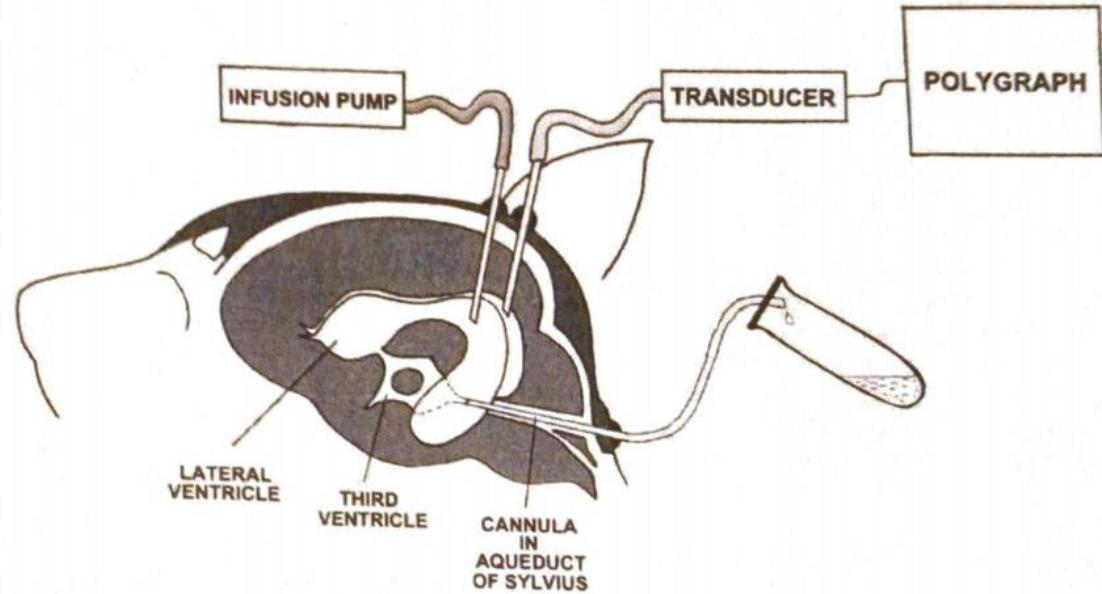
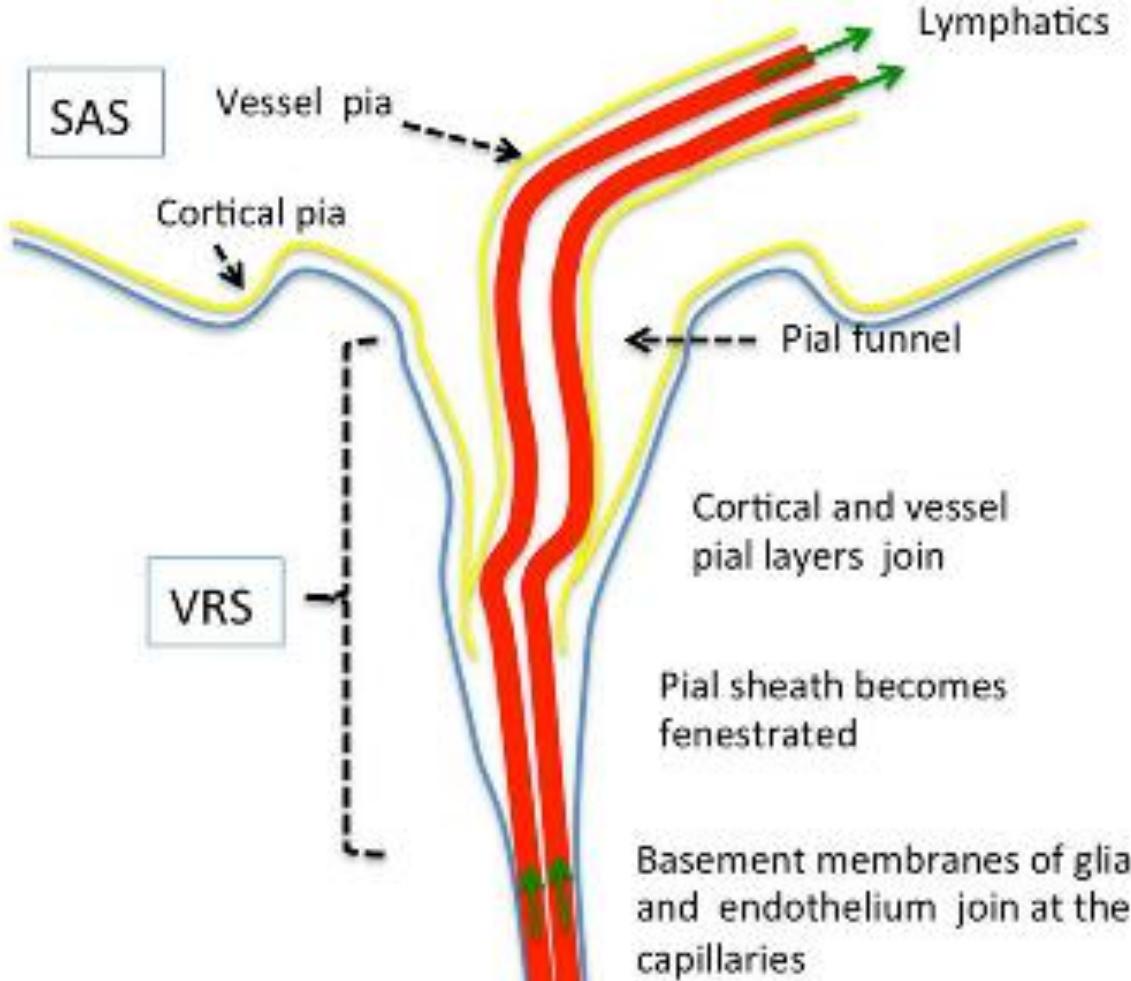


Fig. 1. The experimental model scheme on cat.

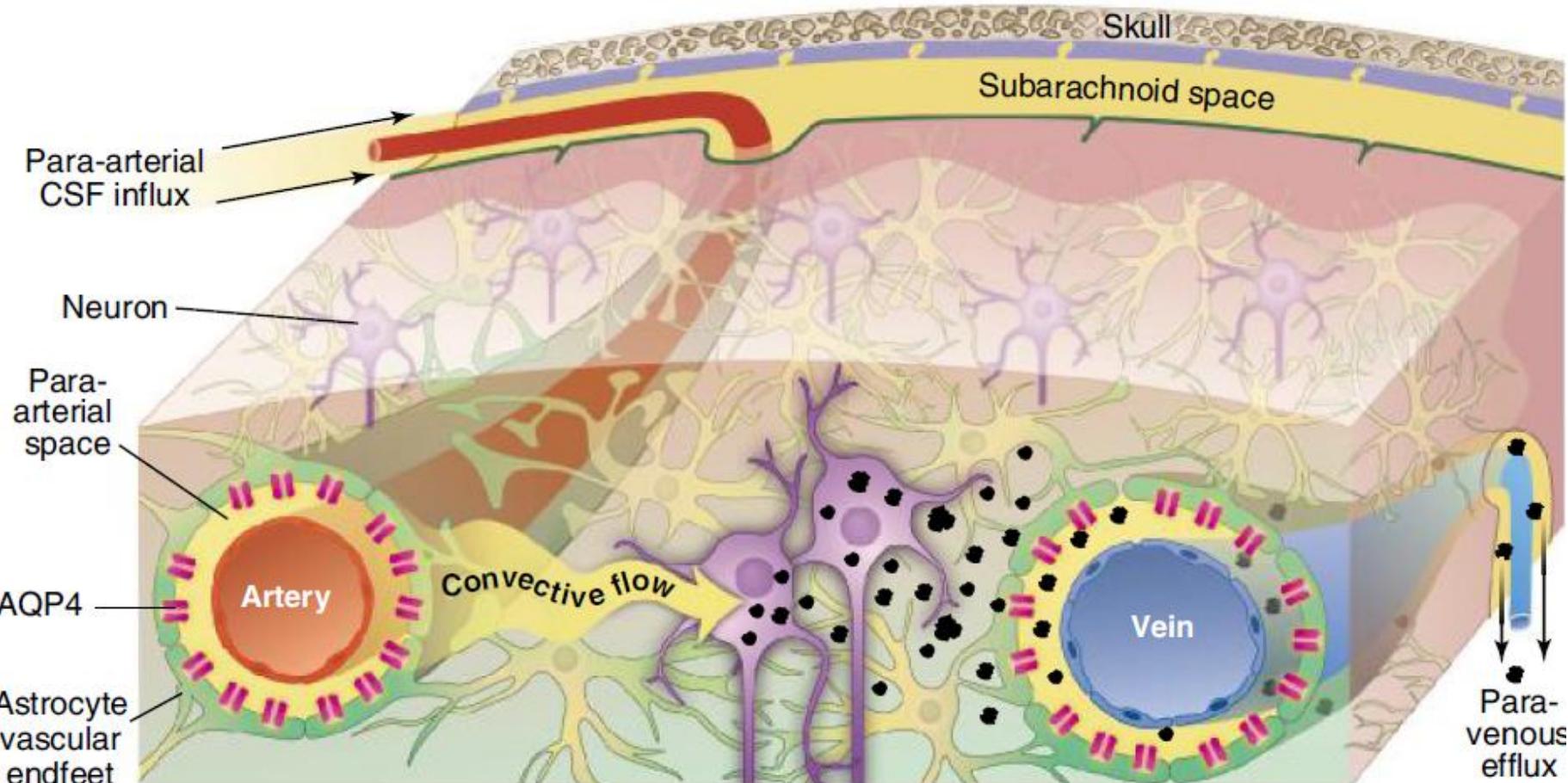
Pulsazione liquorale presente.  
Flusso netto in uscita (outflow) = 0 ml/s

# Lo spazio di Virchow-Robin (VRS): una nuova anatomia



- membrana basale;
- pulsazione arteriosa;
- drenaggio “linfatico”;

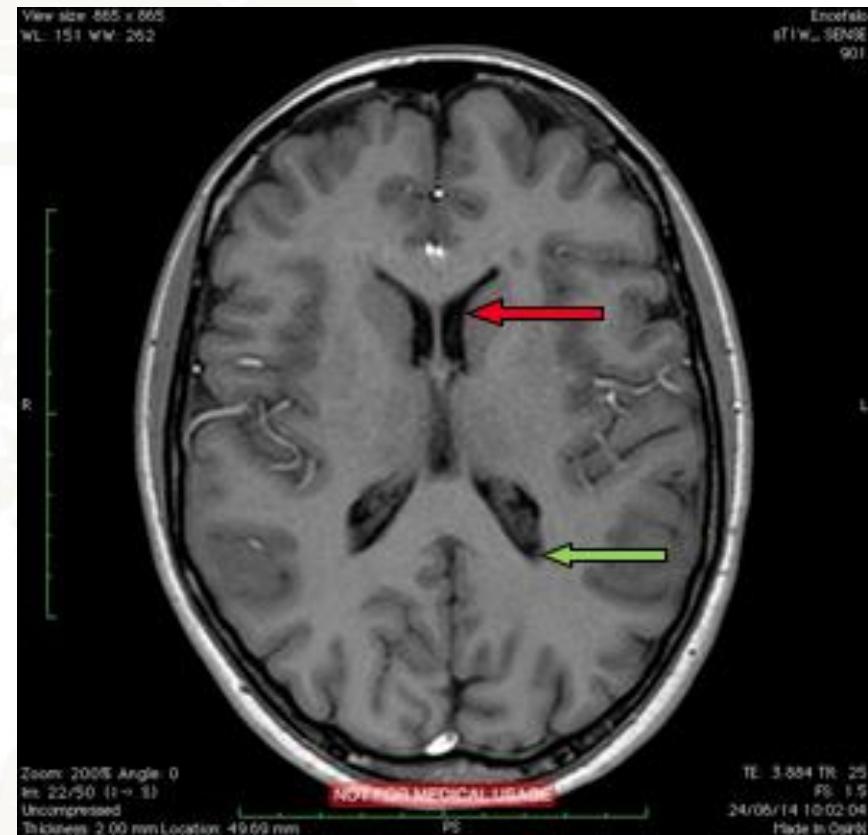
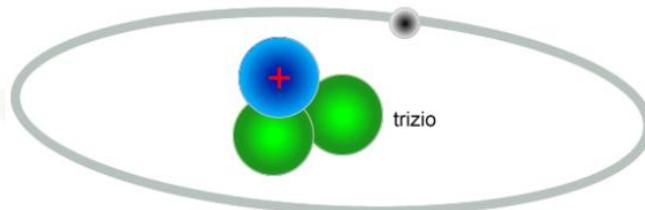
Virchow-Robin, metà XIX sec  
Rennels ML, 1985



# Movimento interstiziale di fluido: iniezione di acqua triziata

Intraventricolare (Bulat , 2008)

Diffusione attraverso il parenchima, non accumulo sul fondo del terzo ventricolo.

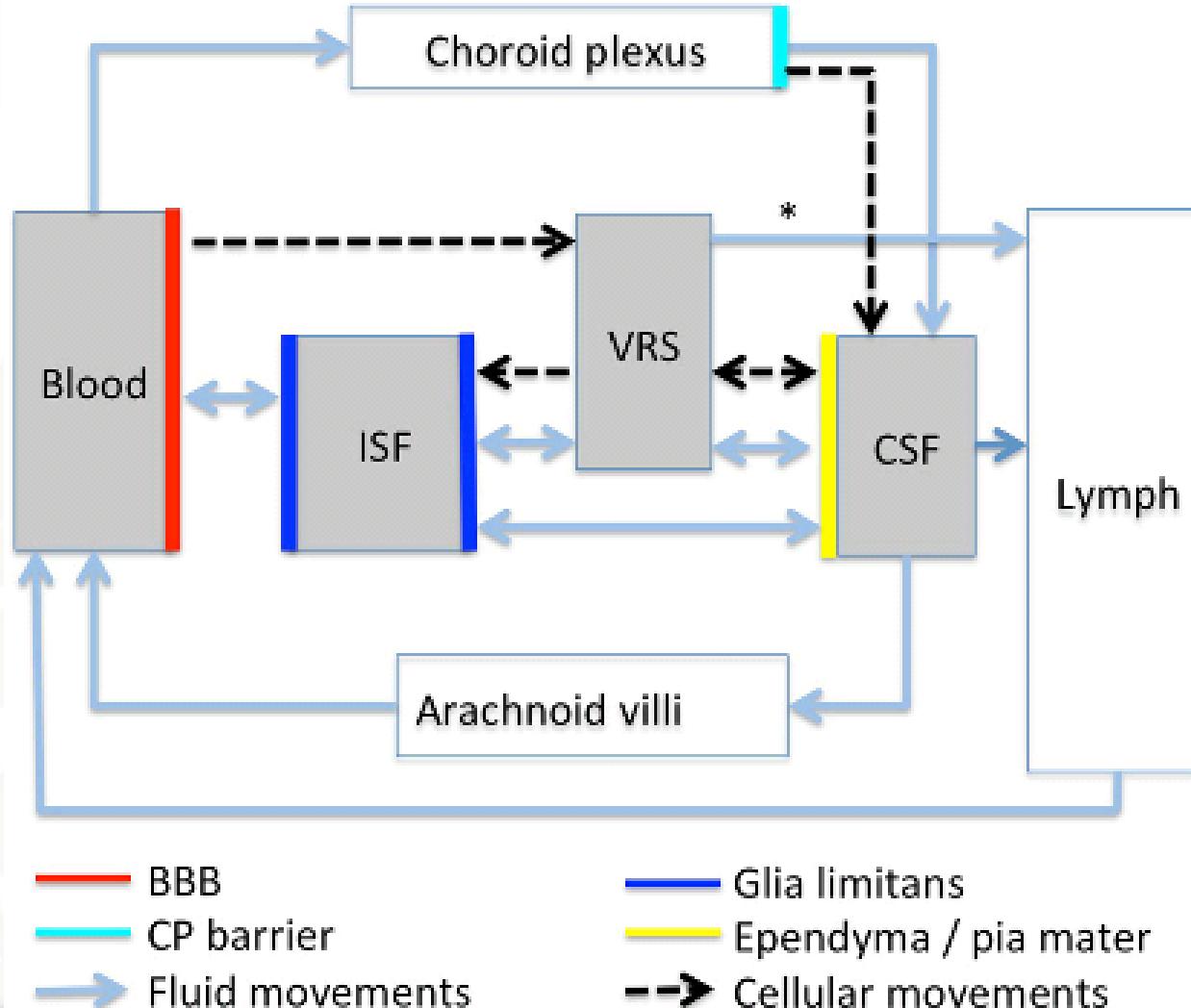




Il liquor circola?

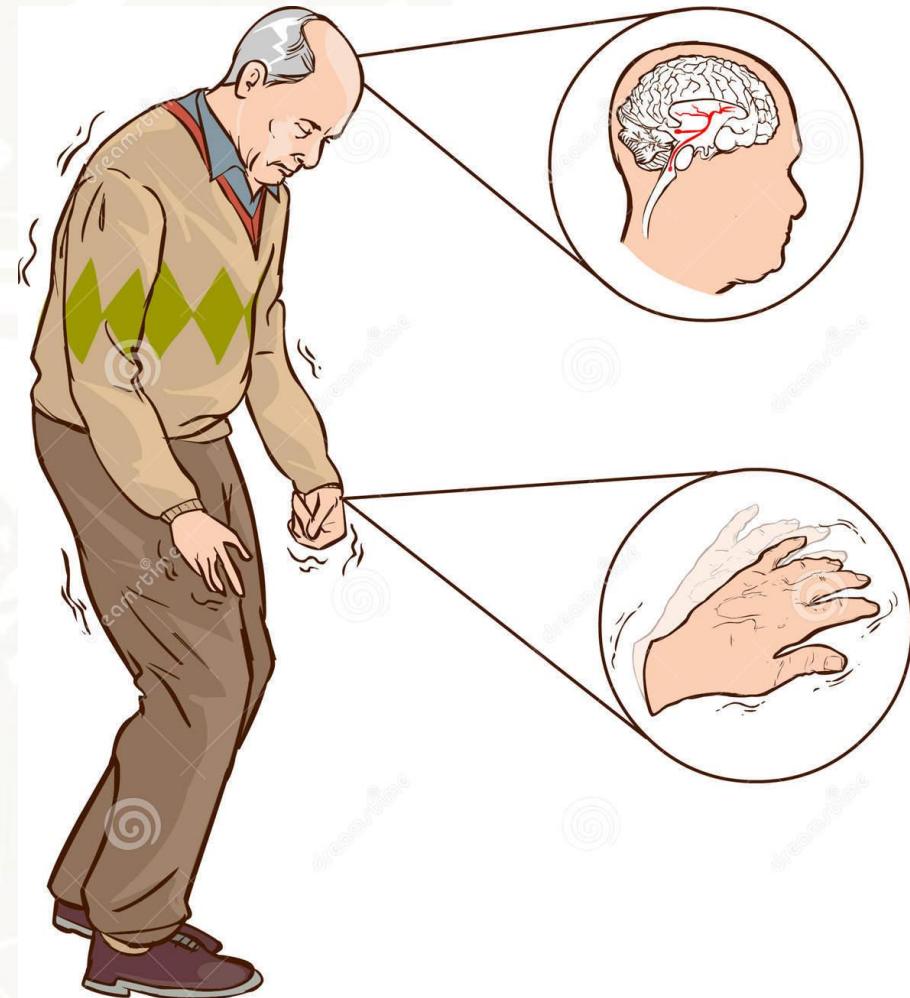
# DISCUSSIONE

# Un nuovo modello



# Risvolti clinici

- Malattie neurodegenerative
- Trattamento ipertensione endocranica



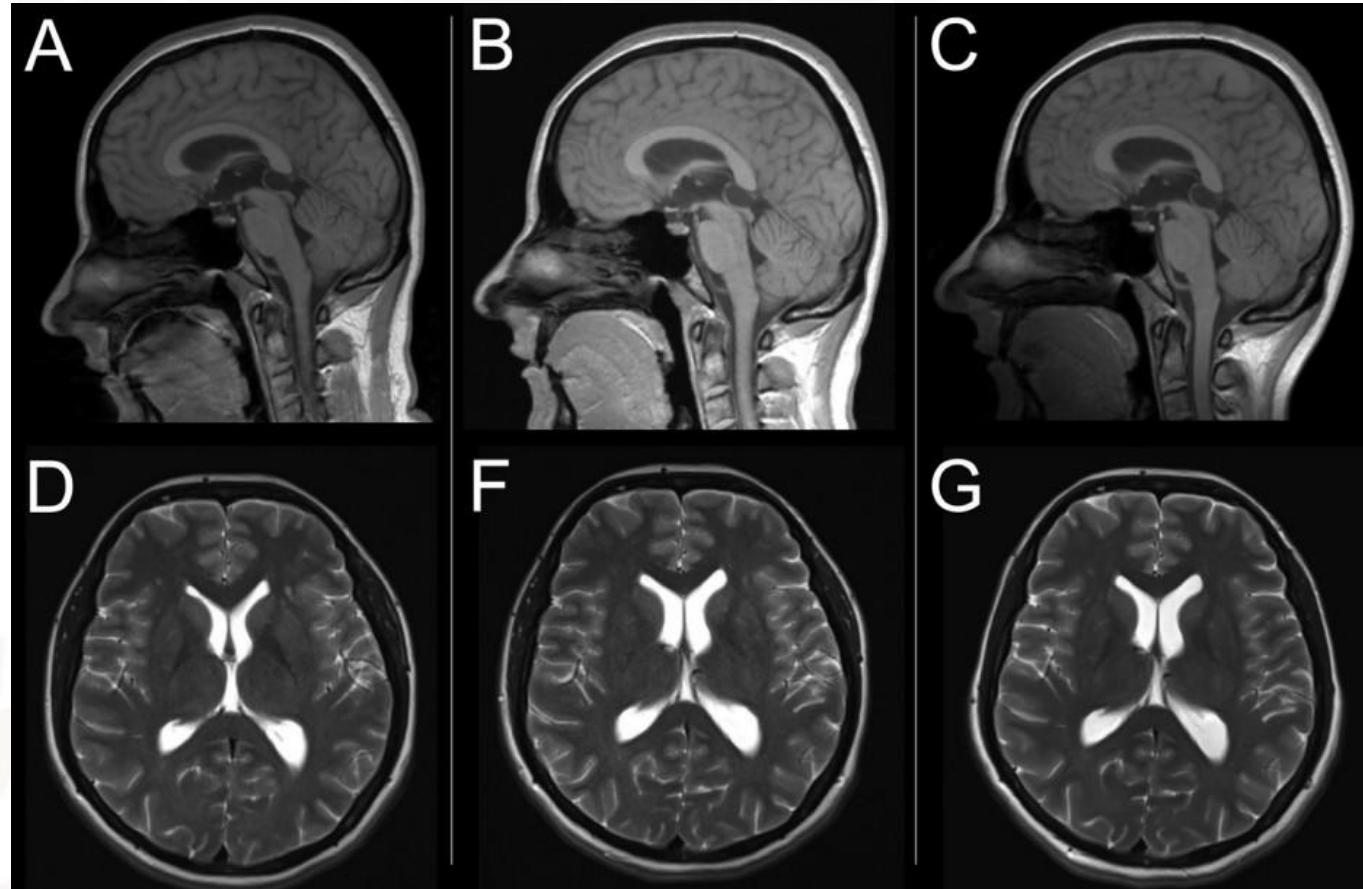
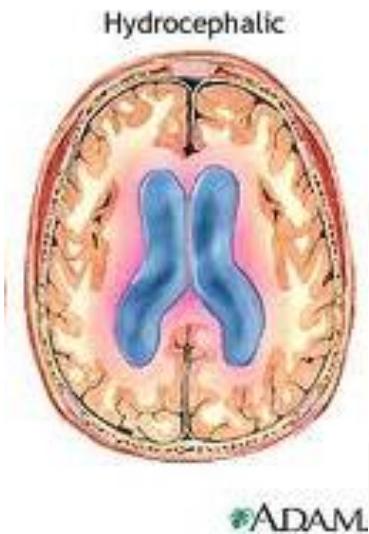


...non mi convince proprio tutto!!

# OBIEZIONI

# Ostruzione acqueduttale e idrocefalo

Rados, 2014 (case report)

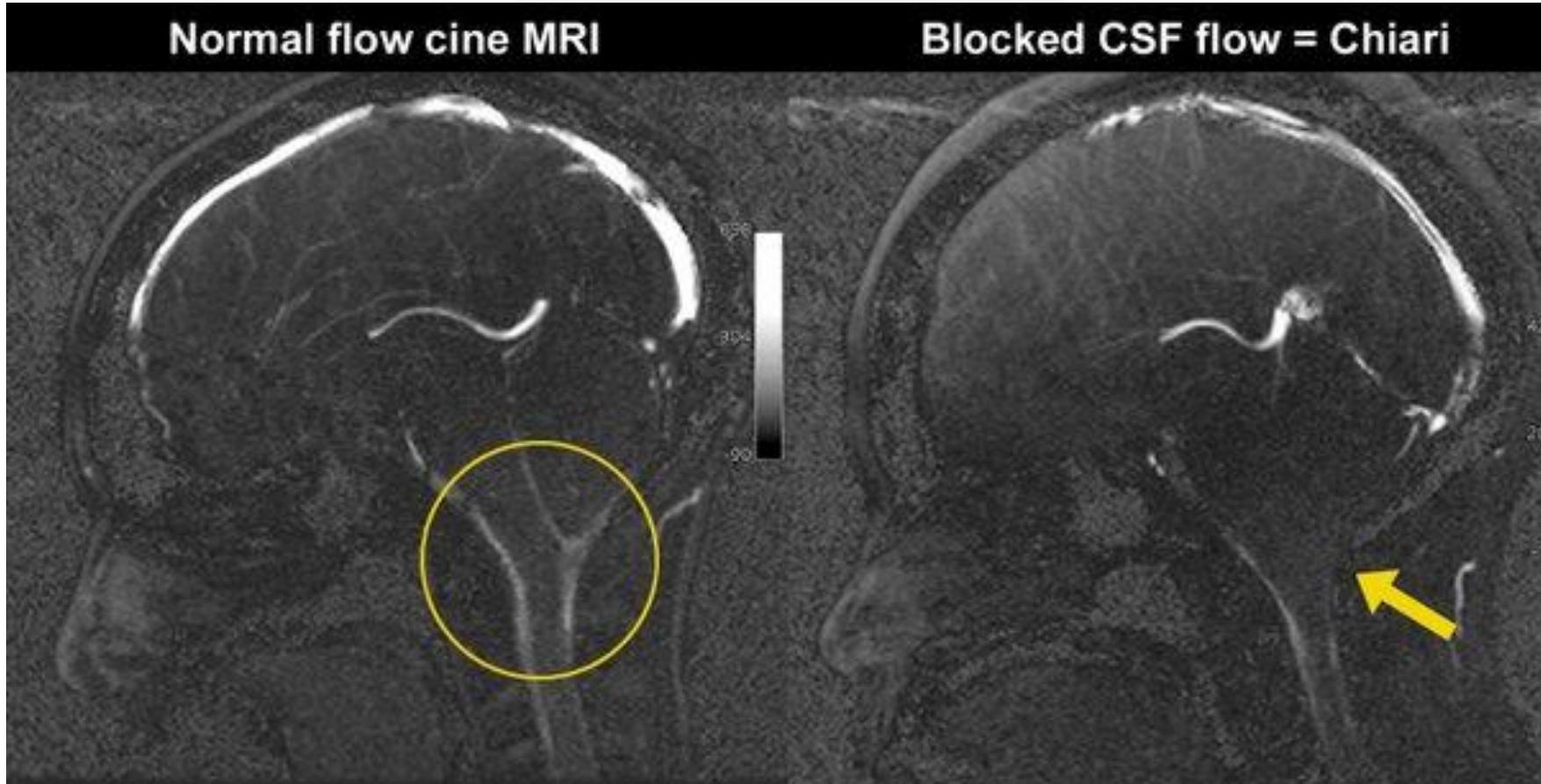


# MRI Cine

Brinker, 2014

Normal flow cine MRI

Blocked CSF flow = Chiari







# Ringraziamenti

- Al prof. De Bonis MD PhD, per il supporto e il consiglio;
- All’Università degli Studi di Ferrara, per l’attenzione educativa e didattica;
- All’Università degli Studi di Modena e Reggio Emilia, per la preziosa opportunità;
- ...a voi tutti che ci avete ascoltato!



QUESTION TIME



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