# Edema cerebrale

ADE per studenti di Nefrologia
23/05/2009

R.Cotrufo

# Edema citotossico

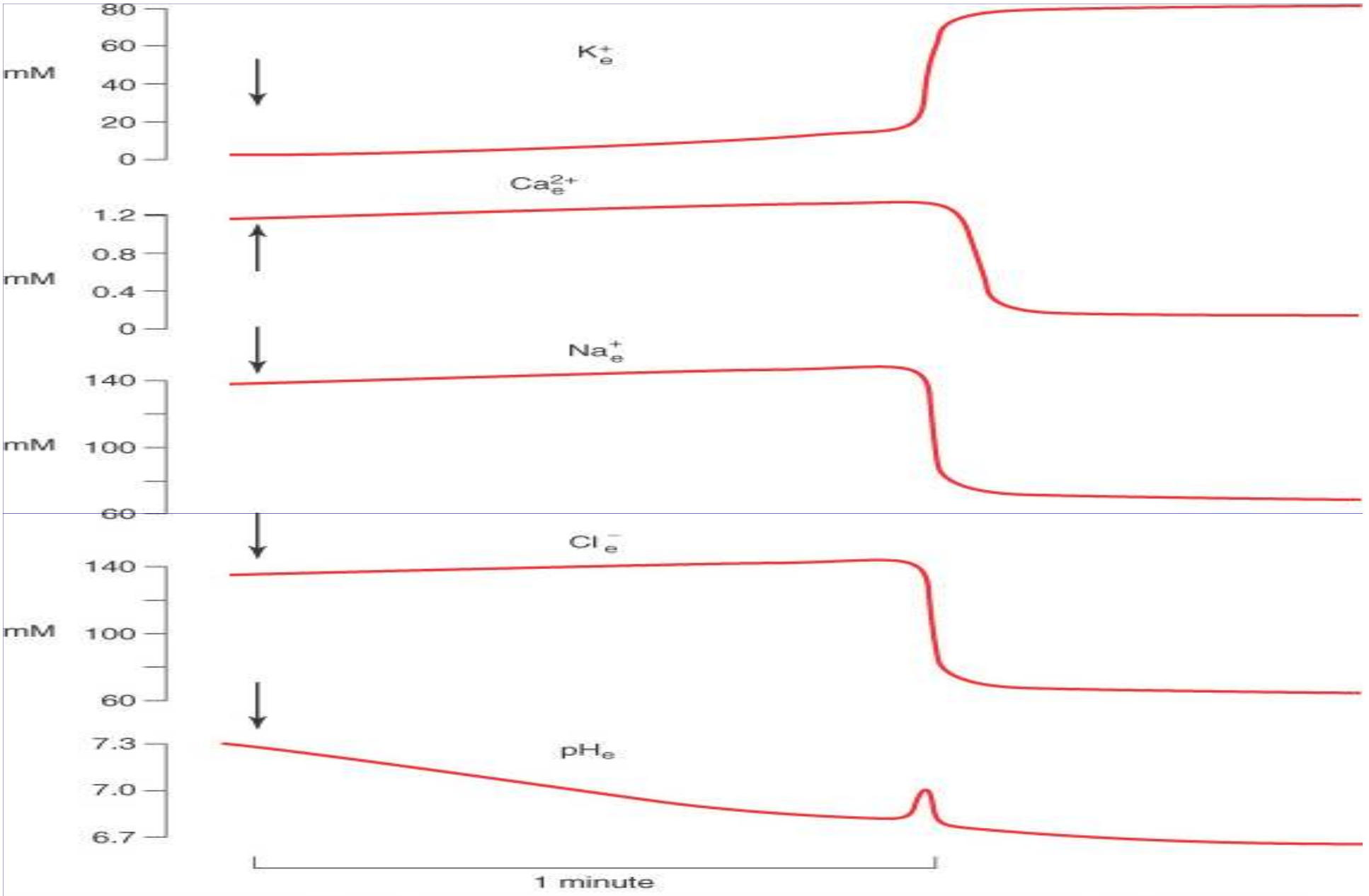



**FIGURE 32-2** Changes in extracellular ion concentrations following ischemia. Extracellular pH starts to decrease immediately after the onset of ischemia. This change is accompanied by slight increases in the extracellular concentrations of $K^+$, $Cl^-$ and $Na^+$. After about 1 min of ischemia, a dramatic shift of ions occurs, with $K^+$ leaving cells and $Ca^{2+}$, $Cl^-$ and $Na^+$ leaving the extracellular space (from [1] with permission).

# Edema vasogenico

# BEE

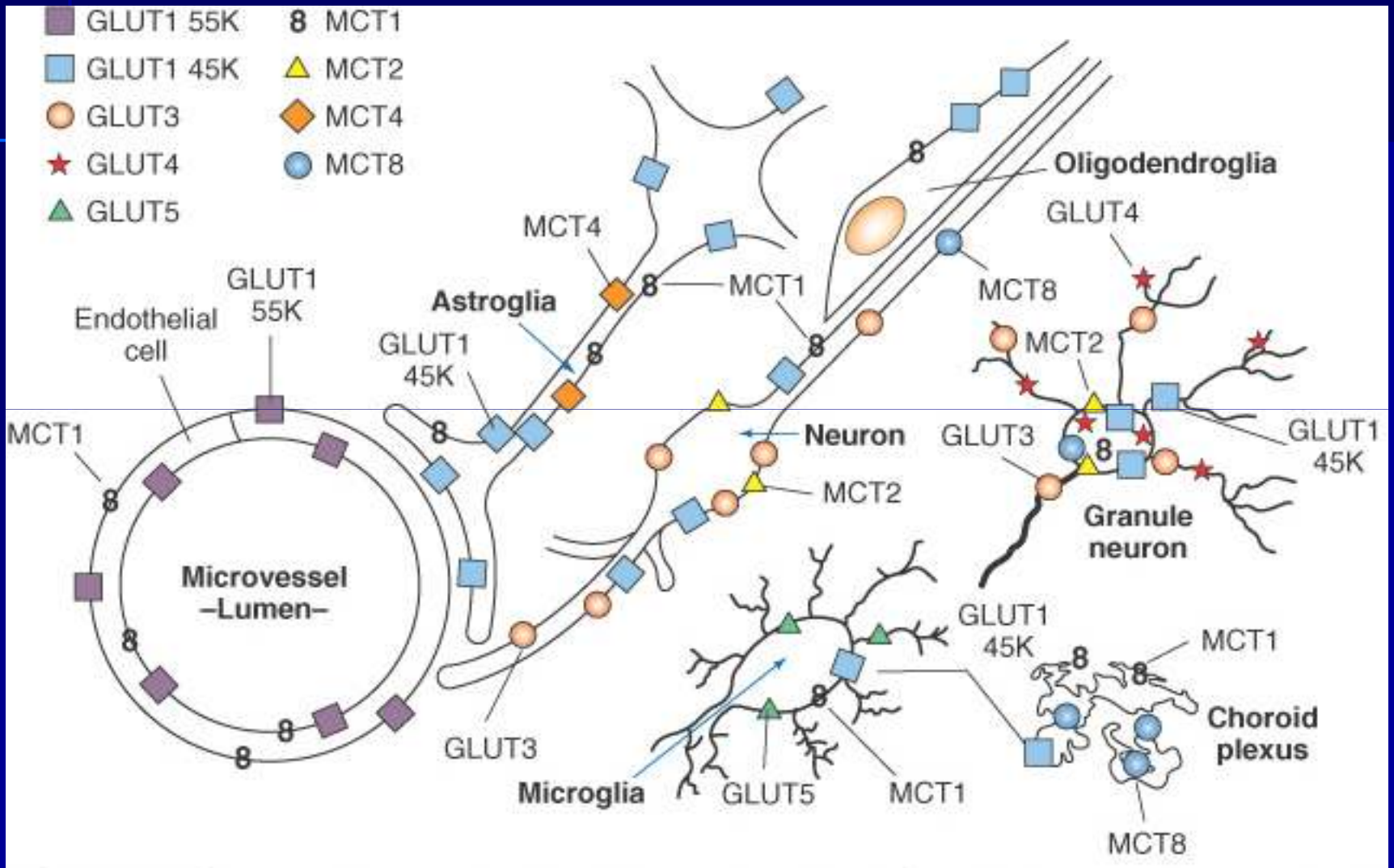
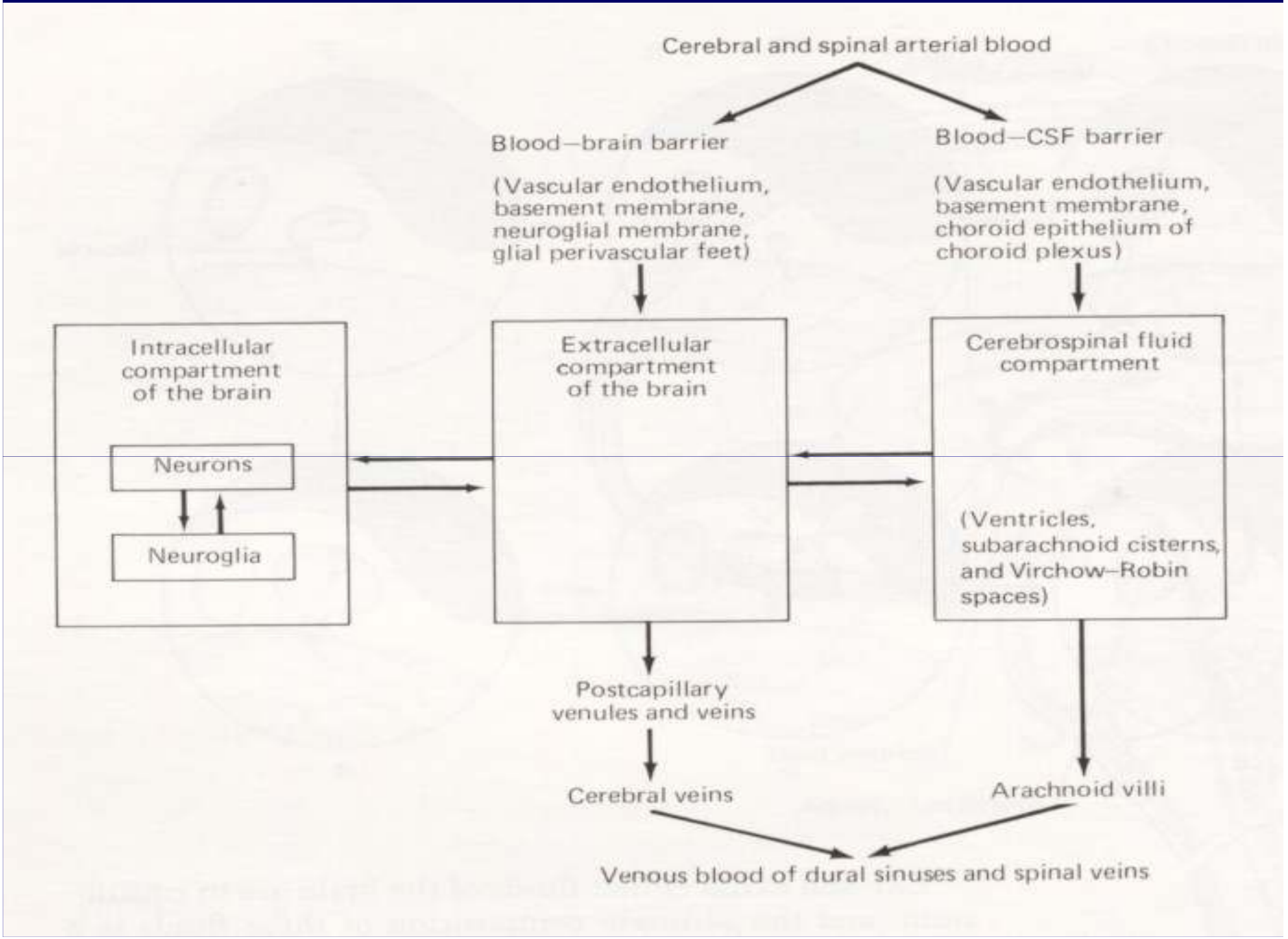



**FIGURE 31-1** Glucose and monocarboxylic acid transporters in brain. Specific glucose and monocarboxylic acid transporters in brain are localized on different types of brain cells.

(Courtesy of Ian Simpson and Susan Vannucci.)



# Il possibile ruolo della AQP4 nell'edema vasogenico

- Le acquaporine sono piccoli canali di membrana omotetramerici che mediano rapidi flussi di acqua attraverso le membrane cellulari.
- La principale acquaporina cerebrale, AQP4, è assemblata nella membrana dei pedicelli astrocitari adiacenti alla membrana basale dei capillari.
- L'ischemia cerebrale causerebbe precoce disassemblaggio di AQP4

R.Cotrufo,2009

# Patologie che inducono edema cerebrale

- Traumi cranici commotivi e contusivi
- Tumori cerebrali
- Encefalopatia ischemica
- Encefalopatia iponatriemica
- Encefalopatia ipossica-ipercapnica
- Encefalopatia renale

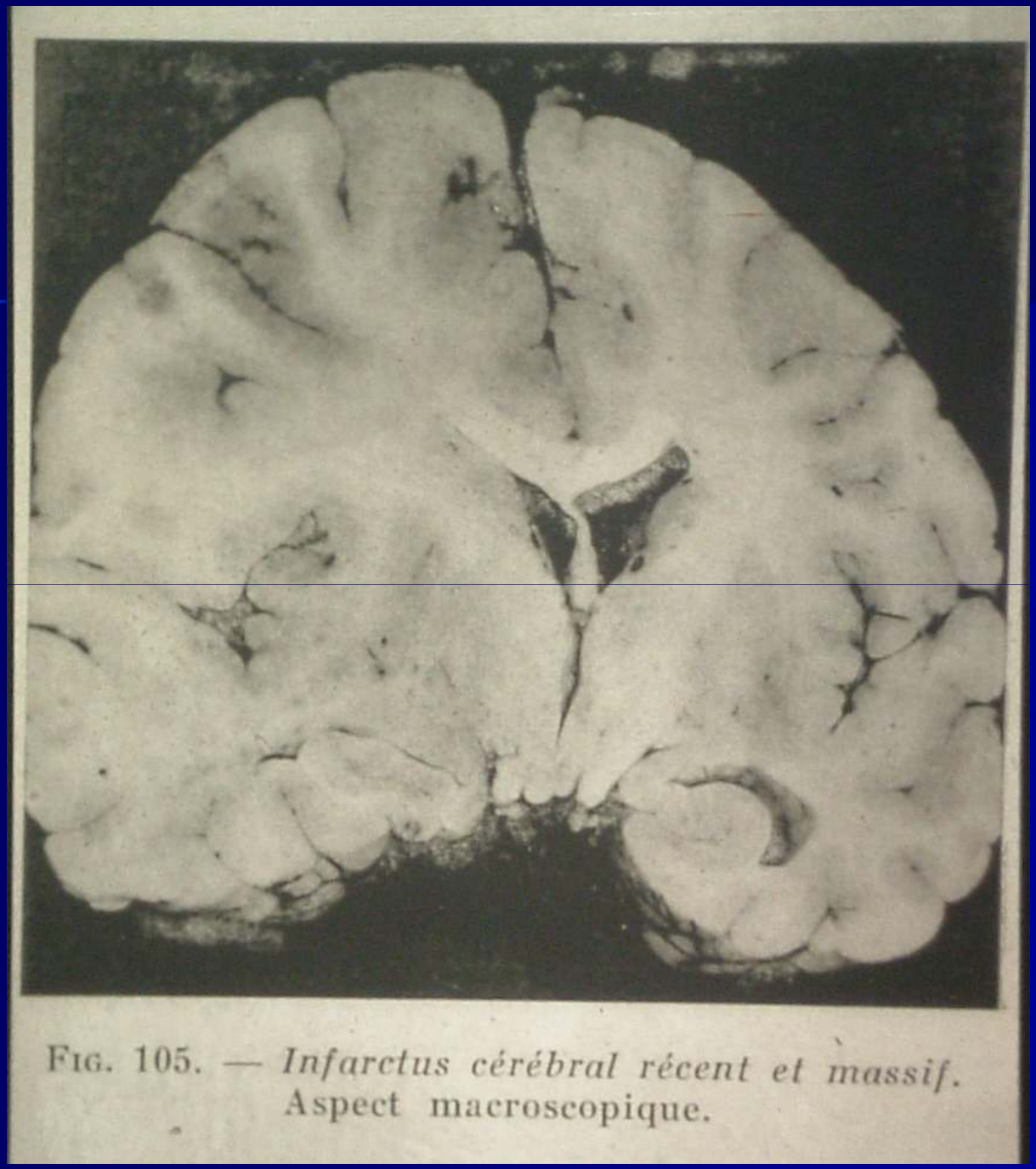
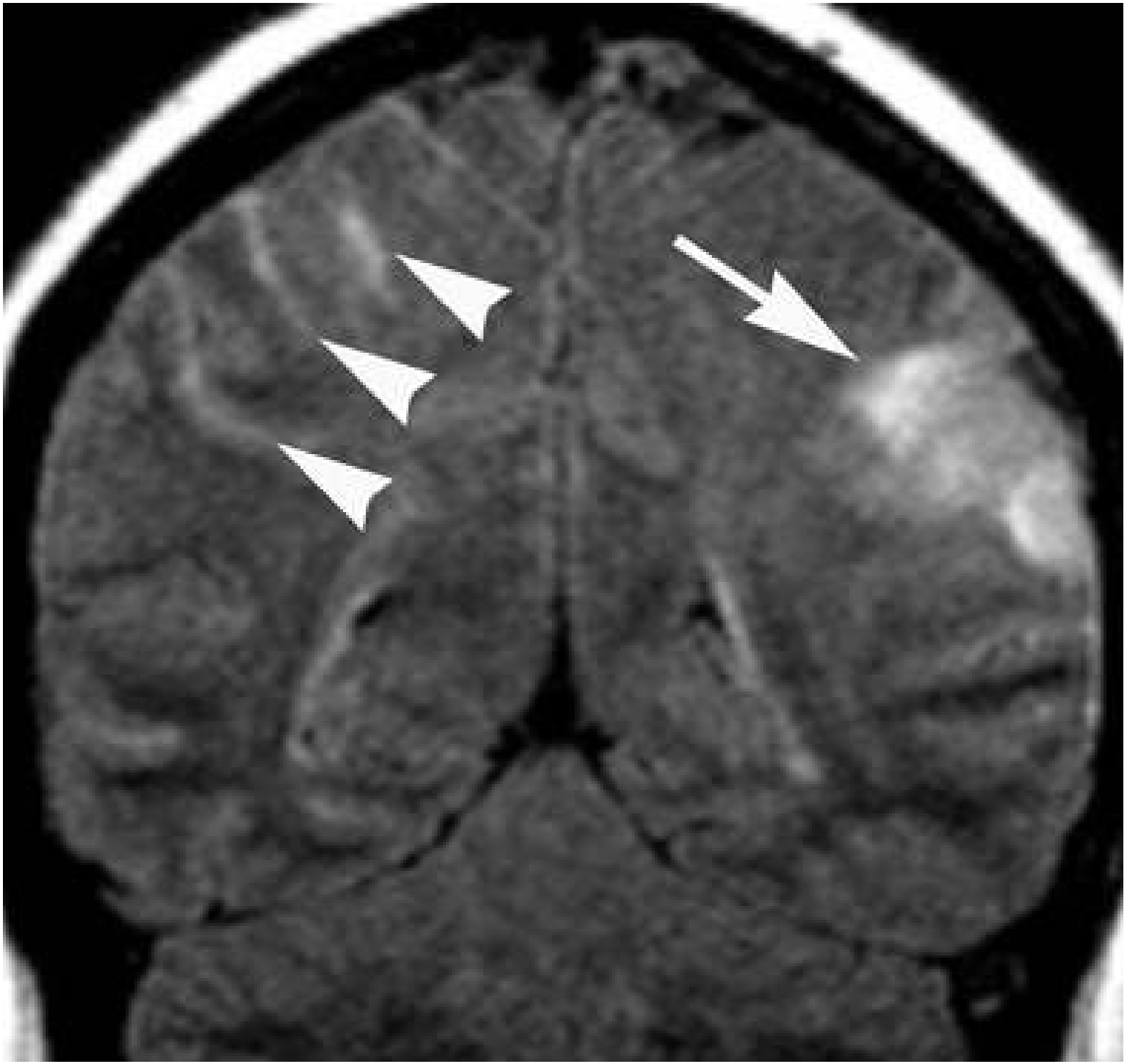
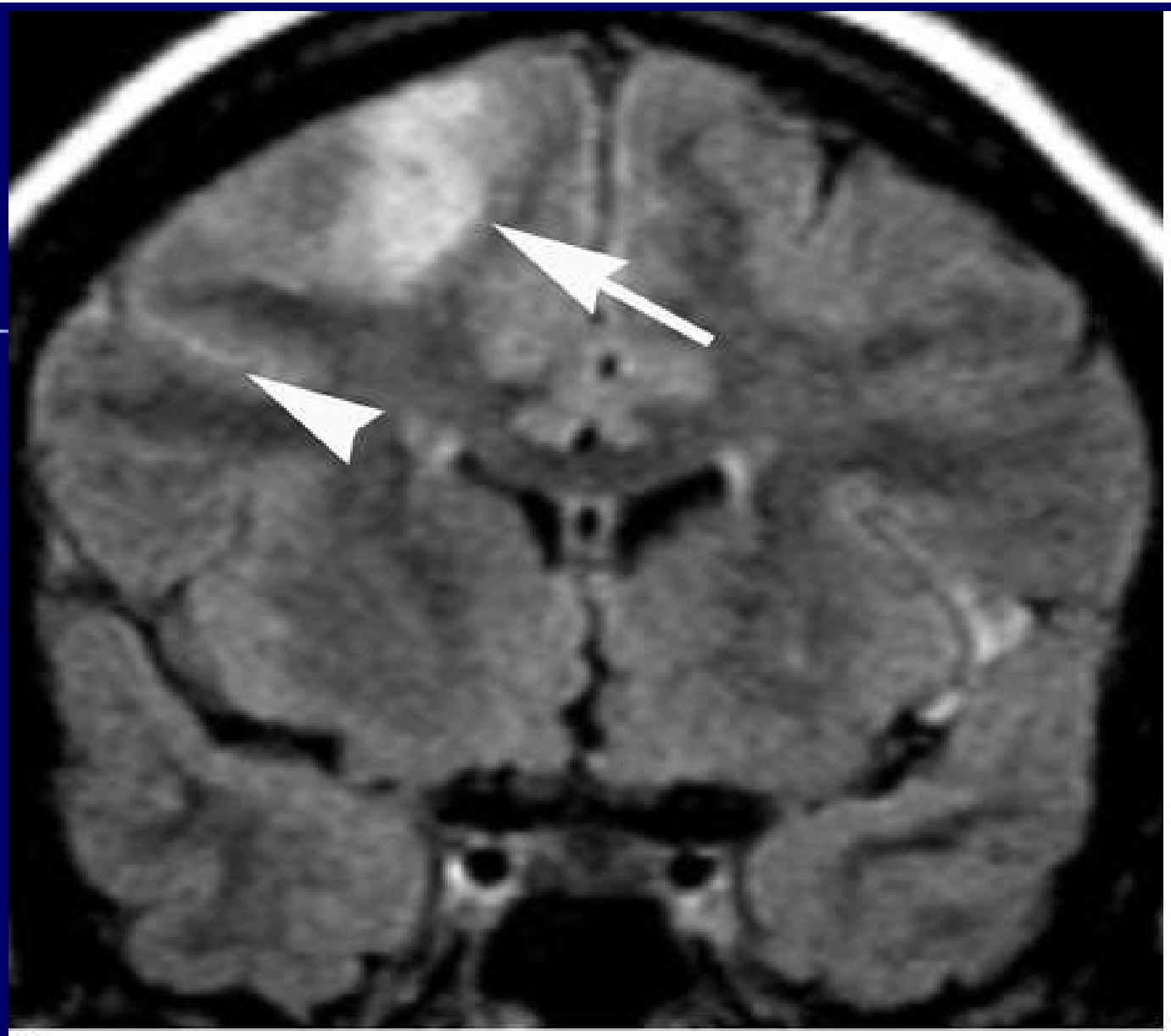


FIG. 105. — *Infarctus cérébral récent et massif.* Aspect macroscopique.





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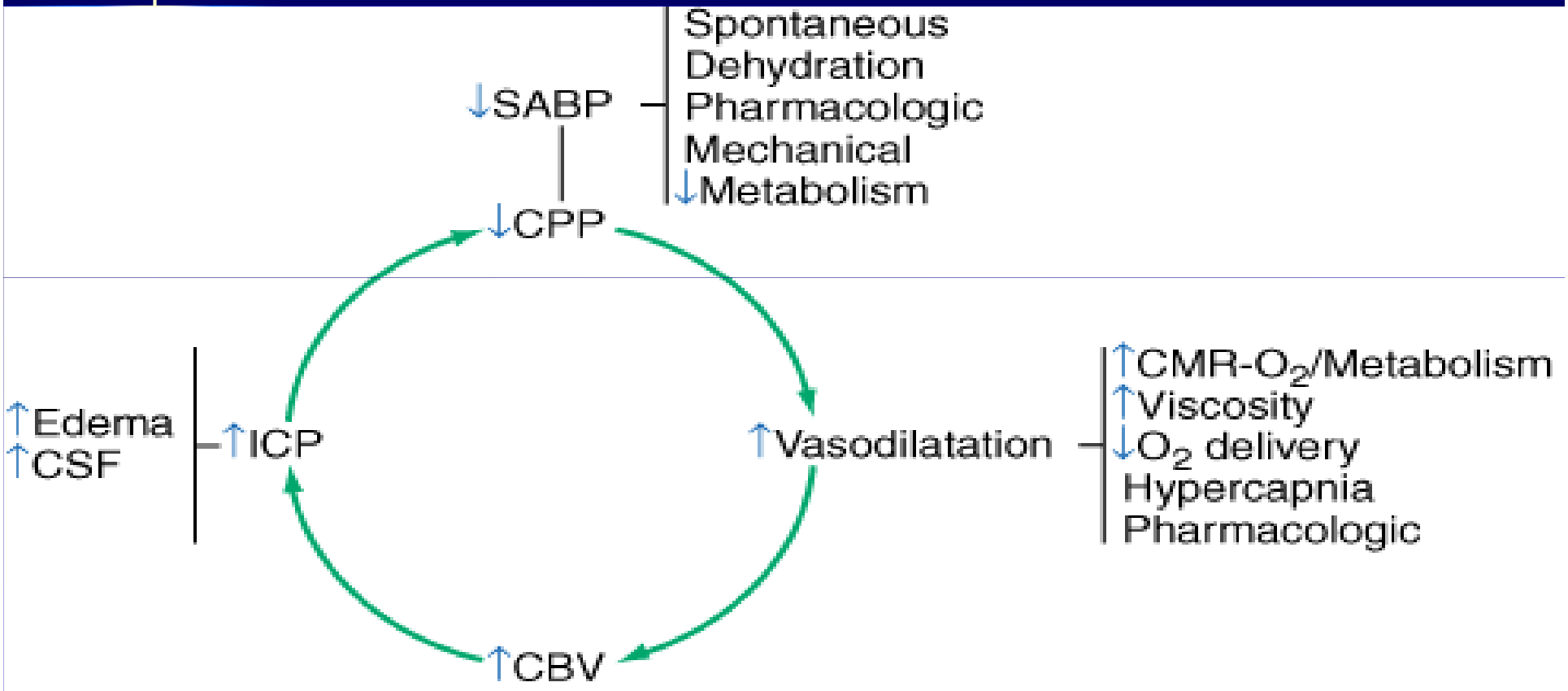
Source: Fauci AS, Kasper DL, Braunwald E, Hauser SL, Longo DL, Jameson JL, Loscalzo J:
*Harrison's Principles of Internal Medicine*, 17th Edition: http://www.accessmedicine.com

# Effetti dell'edema sulla pic: il circolo vizioso edema-ischemia-edema-ischemia




Source: Fauci AS, Kasper DL, Braunwald E, Hauser SL, Longo DL, Jameson JL, Loscalzo J: *Harrison's Principles of Internal Medicine*, 17th Edition: http://www.accessmedicine.com

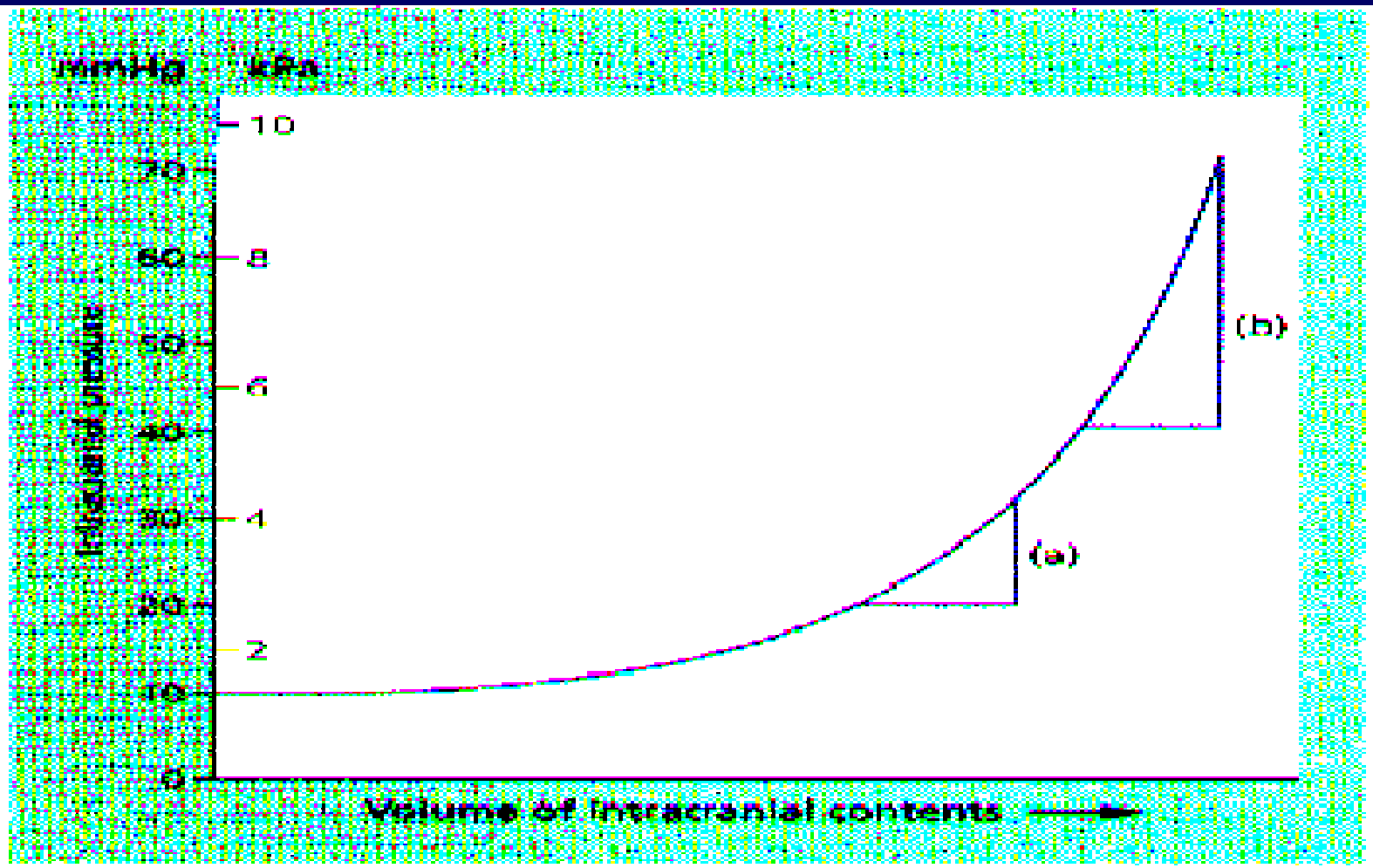



*Fig. 1.4* Theoretical intracranial pressure–volume curve. This diagram illustrates how the volume of intracranial contents may increase, initially, with little change in intracranial pressure. Once a certain threshold has been reached following expulsion of blood and CSF from the intracranial compartment, the pressure rises exponentially and, as the curve steepens, a small rise in volume results in a significant increase in intracranial pressure. (a) and (b) illustrate the relationship between rise in intracranial volume and the theoretical rise in intracranial pressure at two parts of the curve (modified from Ref. 33).

# Rischio erniazioni