Carotid stenting in acute ICA dissection

Technique, indications and debates at Lariboisière

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ICA dissections (ICAD)

- Acute severe unilateral headache

- Ischemic events are inconstant and depend on the location of the hematoma: only sub-intimal hematoma can lead to ischemia
Current treatment is neurological i.e. heparin and bed rest

• Surgical treatment of ICAD is disappointing and far more difficult than for atherosclerosis (extension up to skull base)

• Stent in that situation is much easier and safe than surgery as it does not have same anatomical limitations
One should distinguish two different phases for stenting in ICAD

- **Acute phase**: two first weeks where the stroke risk is maximal (for both natural history and intervention)
- **Chronic phase**: > one month when repair of endothelium has occurred
- **Analysis of the literature** must pay attention to this crucial data
Stenting ICAD

• Condition: to stent a straight dissected arterial segment (not in a curve with excess length)
• First navigation with a microcatheter to get into the normal channel
• Exchange manoeuver with 300 cm 0.014
• Carotid wall stent (closed-cell stent)
  – always
  – and very often stent is longer than in atherosclerosis (7 X 40)
Stenting of ICAD at the acute phase of stroke: 2 indications

- Cerebral embolism needing recanalization: stent is used to give access to distal occlusion but the true stroke treatment is thrombectomy.

- Hemodynamic stroke (stroke in evolution): stent is used to release the stenosis and is the mean to treat the stroke.
1- Acute cerebral **embolism** (arterio-arterial embolism)

- Stenting of the dissection is performed either to give access to intracranial arteries or to prevent recurrent embolism at the end of the intervention.

- As for any kind of acute cerebral arterial occlusion, the crucial point here is the onset of revascularization (before 6 hours) that is now performed with “stentriever”. 
Right hemiplegia & aphasia seen at 4 hours after onset, included in protocol THRACE (IV vs IV+IA)
Falled in arm IA (after IV lysis): occlusion cervical ICA + occlusion M1 & siphon
Stent in ICA to give access to stent retriever in MCA
Final result and control MRI: dramatic improvement at D1
Right hemiplegia & aphasia seen at 4 hours after onset
Stenting to access MCA thrombus
Current debate is the place of preventive stenting in that indication

• Is the medical treatment sufficient to prevent further stroke in ICAD presenting a TIA or minor embolic stroke? Neurologists answer “yes” however…

• Many of the patients that I have recanalized in ICAD were already treated by anticoagulant
2- *Hemodynamic* infarct
Stroke in evolution due to severe acute stenosis + incompetent circle of Willis
Visualization of the watershed area ischemia on this aortic arch injection: stenting of the stenosis is the only way to expect an improvement.
In that hemodynamic situation

- Stenting must be always performed under local anesthesia

- General anesthesia is contra-indicated because it induces drop of arterial blood pressure with subsequent risk of worsening of the ischemia and ICA occlusion
Stenting
Final result after stenting with dramatic improvement of patient
However, same question, why waiting for a hudge deficit facing such a stenosis with watershed infarct?
No circle of Willis
After a very controversial discussion with my neurologists...
Conclusion

• Stenting was safely performed in ICAD
  – 20 patients at the acute phase
  – 12 patients at the chronic phase

• Case-by-case discussion and to change of neurological mind is not easy…

• Results of French RCT may help to convince them of the interest of the technique…?