Essential Imaging for Treatment of Acute Ischemic Stroke

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Disclosures

None
What do we need to know in acute stroke?
One-stop management?!?

Net gain 30+ minutes
Flat-Detector CT (FDCT)
Cone-beam CT, C-arm CT, DynaCT, XperCT
Validation for hemorrhage

Detection of intracranial hemorrhage

<table>
<thead>
<tr>
<th></th>
<th>MDCT (-)</th>
<th>MDCT (+)</th>
<th>Sensitivity</th>
<th>Specificity</th>
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<tbody>
<tr>
<td>SAH</td>
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<tr>
<td>FDCT (-)</td>
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<td>95%</td>
<td>97%</td>
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<tr>
<td>FDCT (+)</td>
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<td>37</td>
<td></td>
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<tr>
<td>IVH</td>
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</tr>
<tr>
<td>FDCT (-)</td>
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<td>97%</td>
<td>100%</td>
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<tr>
<td>FDCT (+)</td>
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<td>33</td>
<td></td>
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<tr>
<td>PH</td>
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<tr>
<td>FDCT (-)</td>
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<td>99%</td>
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<tr>
<td>FDCT (+)</td>
<td>1</td>
<td>22</td>
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</table>
Comprehensive Stroke Diagnosis based on 3 Flat Detector CT Scans

Enhanced XperCT

Multi Detector CT

Images courtesy of Philips BV
Comprehensive Stroke Diagnosis based on 3 Flat Detector CT Scans

- Identify bleeding and ischemic changes
- Identify proximal occlusion
- Identify collaterals

Images courtesy of Philips BV
One-Stop Management of Acute Stroke Patients
Minimizing Door-to-Reperfusion Times

Marios-Nikos Psychogios, MD, PD; Daniel Behme, MD; Katharina Schregel, MD; Ioannis Tsogkas, MD; Ilko L. Maier, MD; Johanna Rosemarie Leyhe, MS; Antonia Zapf, PD; Julia Tran, MS; Mathias Bähr, MD; Jan Liman, MD, PD*; Michael Knauth, MD*

Conclusions—In this small series, a one-stop management protocol of selected stroke patients using latest generation flat detector CT led to a significant reduction of intrahospital times. (Stroke. 2017;48:00-00. DOI: 10.1161/STROKEAHA.117.018077.)

Key Words: cerebral angiography ■ cerebral hemorrhage ■ cone-beam computed tomography ■ stroke ■ thrombectomy
## Results 2016-2018

<table>
<thead>
<tr>
<th>One-stop cases</th>
<th>210</th>
<th>100</th>
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<tr>
<td>Door-to-CT</td>
<td>13 min</td>
<td>10 min</td>
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<td>Door-to-Groin</td>
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<td>25</td>
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<tr>
<td>Door-to-Reperf</td>
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<td>68</td>
</tr>
<tr>
<td>Door-to-Reperf M1 only</td>
<td>60</td>
<td>59</td>
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</table>

courtesy of M. Psychogios
Guidelines for the Early Management of Patients With Acute Ischemic Stroke: 2019 Update to the 2018 Guidelines for the Early Management of Acute Ischemic Stroke

A Guideline for Healthcare Professionals From the American Heart Association/American Stroke Association

3. In patients with suspected intracranial LVO and no history of renal impairment, who otherwise meet criteria for mechanical thrombectomy, it is reasonable to proceed with CTA if indicated before obtaining a serum creatinine concentration.

5. It may be reasonable to incorporate collateral flow status into clinical decision-making in some candidates to determine eligibility for mechanical thrombectomy.
Conclusion

Time management of stroke patients…

✓ …starts with symptom onset. If FAST-ED* >= 4, the EMS should call the neurointerventionalist
✓ One-stop management is safe, with comparable sICH rates even for „mothership“ patients without prior imaging
✓ “Direct to angio” leads to door-to-reperfusion times of ~60-70min and improved clinical outcomes of patients with LVO

*FAST-ED: Field Assessment Stroke Triage for Emergency Destination
Thank you!
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