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Lack of standardization in the nomenclature of dating strokes or the desperate search for a common language

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Introduction

When reading radiology reports from various medical institutions across Europe, a pronounced lack of consensus emerges regarding the definition of stroke and infarction stages. This ambiguity persists despite significant advancements in stroke management and the development of novel time frames for mechanical thrombectomy procedures. Terms such as "hyperacute," "acute", and "subacute" are employed in varying and often overlapping contexts, leading to confusion among practitioners. Consequently, many thrombectomy research studies have resorted to using the time of symptom onset in conjunction with the Alberta Stroke Program Early CT Score (ASPECTS) as a proxy to delineate the timing and nature of stroke interventions [1].

Methods We have summarized the terminology commonly used in our neuroradiological clinical practice regarding the state of strokes / infarcts in a graphic. It could serve as a proposal for standardization.

Results

Figure 1 illustrates our nomenclature for the dating of non-hemorrhagic strokes. These terms are already widely used in clinical practice, but we could not find an adequate consensus document or an unambiguous definition in the literature. The subacute phase can be divided into early and late. In the early subacute phase, infarct edema occurs, which can lead to compression of healthy brain tissue and a midline shift. In the late phase, this edema regresses.

Discussion

An older definition describes an acute stroke as the first 24 h after symptom onset, a subacute stroke as the phase between day 1 and day 5, and a stroke older than 5 days as chronic [2]. Another definition describes an early hyperacute phase (0–6 h), a late hyperacute phase (6–24 h), an acute phase (1–7 days), as subacute phase (1–3 weeks) and a chronic phase (> 3 weeks) [3].

If you look through the definition, statements [4, 5] and guidelines [6–8], you won't get any wiser. In order to create clear definitions in these papers, mixed terms such as "acute stroke < 6 hours" or "acute stroke < 4.5 hours" are often used. The question is also who should set and name these times in the interdisciplinary competition. In our opinion, it's actually quite clear: only the imaging.

Due to the individual compensation possibilities for different collaterals and anatomical variants of the patients, one cannot and should not set a fixed time for the stages of the stroke. For example, a recent prospective study found a Diffusion-Weighted Imaging (DWI)-Fluid-Attenuated Inversion Recovery (FLAIR) mismatch in 52.6% of patients between 4.5 and 10 h after symptom onset [9]. This indicates that an active or acute infarction process is ongoing at this time, and under certain circumstances, a thrombectomy might still be considered appropriate.

For this reason, the nomenclature of the phase of a stroke should be strictly based on imaging to accelerate interventions and simplify interdisciplinary

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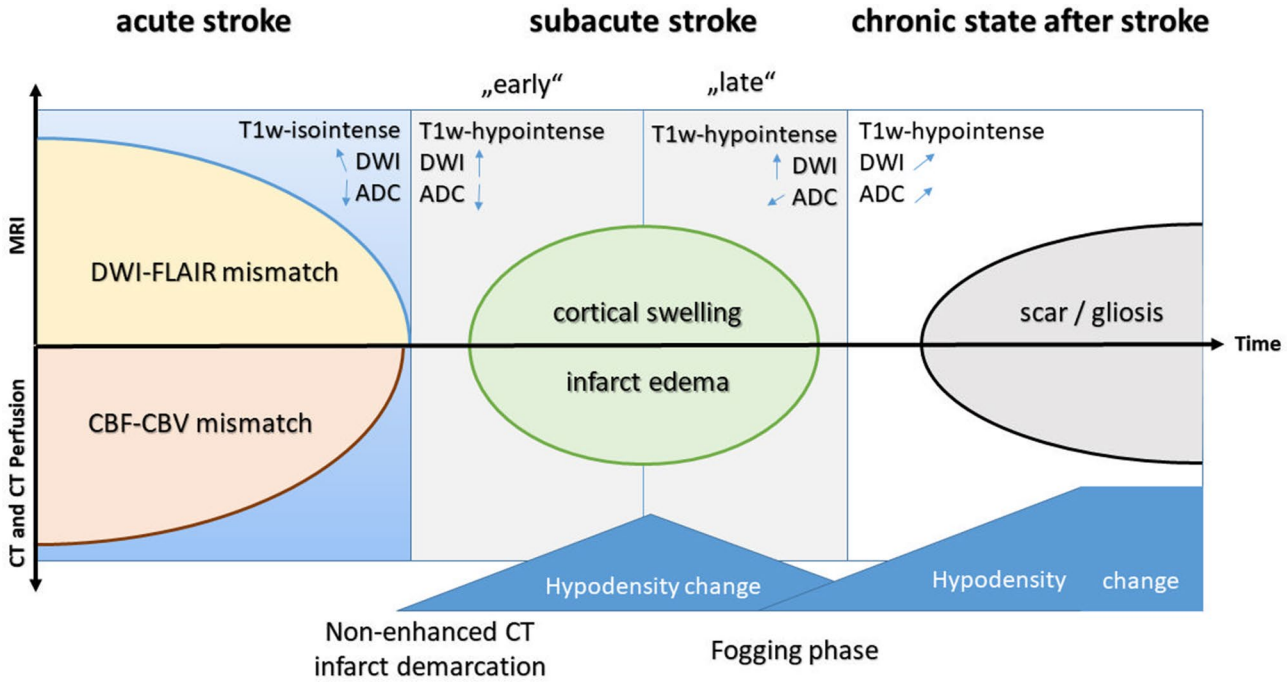

Fig. 1 Schematic illustration of a simplified nomenclature for non-hemorrhagic strokes. Legend: CT – computed tomography; MRI – magnet resonance imaging; T1w- T1 weighted imaging; DWI – diffusion-weighted imaging; ADC – apparent diffusion coefficient; FLAIR - fluid attenuated inversion recovery; CBF – cerebral blood flow; CBV- cerebral blood volume

communication. We recommend a simple, logical division into three phases: (1) "acute stroke" for the phase when we can detect a mismatch and interventions make sense, (2) "subacute stroke" for the phase in which secondary complications may occur and, if necessary, a decompressive (hemi-) craniectomy can be performed, and (3) the chronic state after stroke in which gliosis zones and scars form.

Author contributions

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Data availability

No datasets were generated or analysed during the current study.

Declarations

Ethical approval

Not applicable.

Informed consent

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Consent for publication

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Competing interests

The authors declare no competing interests.

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