Intracranial branch atheromatous disease (BAD) was originally described as the occlusion or stenosis at the origin of a deep penetrating artery due to large parent arterial disease or by microatheroma of the proximal portion of a perforator [1]. The term BAD is currently used to label imaging features supposedly associated with the proximal occlusion of a penetrating artery.

We review the definition of BAD, as well as the associated clinical and imaging features.

**3. Summary**

- We found a great heterogeneity in the criteria used to define BAD related stroke.
- There is a great variability of the clinical features reported in BAD related stroke patients, in particular a consistent association between BAD and any specific vascular risk factor profile has not been detected.
- Despite discrepant definitions, early neurological worsening is frequently observed in BAD related strokes, although no specific predictor or mechanism of progression has been identified [3].
- Traditional imaging techniques such as CT and conventional MRI can only show indirect features of parent artery disease, so BAD radiological diagnosis is mostly based on the features of the subcortical infarction, i.e., vascular territory, dimensions and/or shape of the acute ischemic lesion.
- Recently, High-Resolution (HR) MRI proved to be capable of studying the morphology of intracranial artery vessels, including the presence of plaques involving parent arteries [4]. This could allow direct exploration of the atheromatous small vessel and parent vessel lesions that subend to BAD.

**Figure 5:** Imaging findings of BAD related infarct and branch atheromatous plaque in the middle cerebral artery (a) and in the basilar artery (b). Note the absence of lesions on MRA and the mild enhancement of the plaque on T1E images [4].

**REFERENCES**