CT-Perfusion and cerebellar diaschisis in stroke patients

Polverino P, Ajcevic M, Furlanis G, Lugnan C, Caruso P, Ridolfi M, Naccarato M, Manganotti P.

Neurological Clinic
Azienda Sanitaria Universitaria Integrata di Trieste - *Department of Medical, Surgical and Health Sciences*
University of Trieste – TRIESTE – Italy

INTRODUCTION

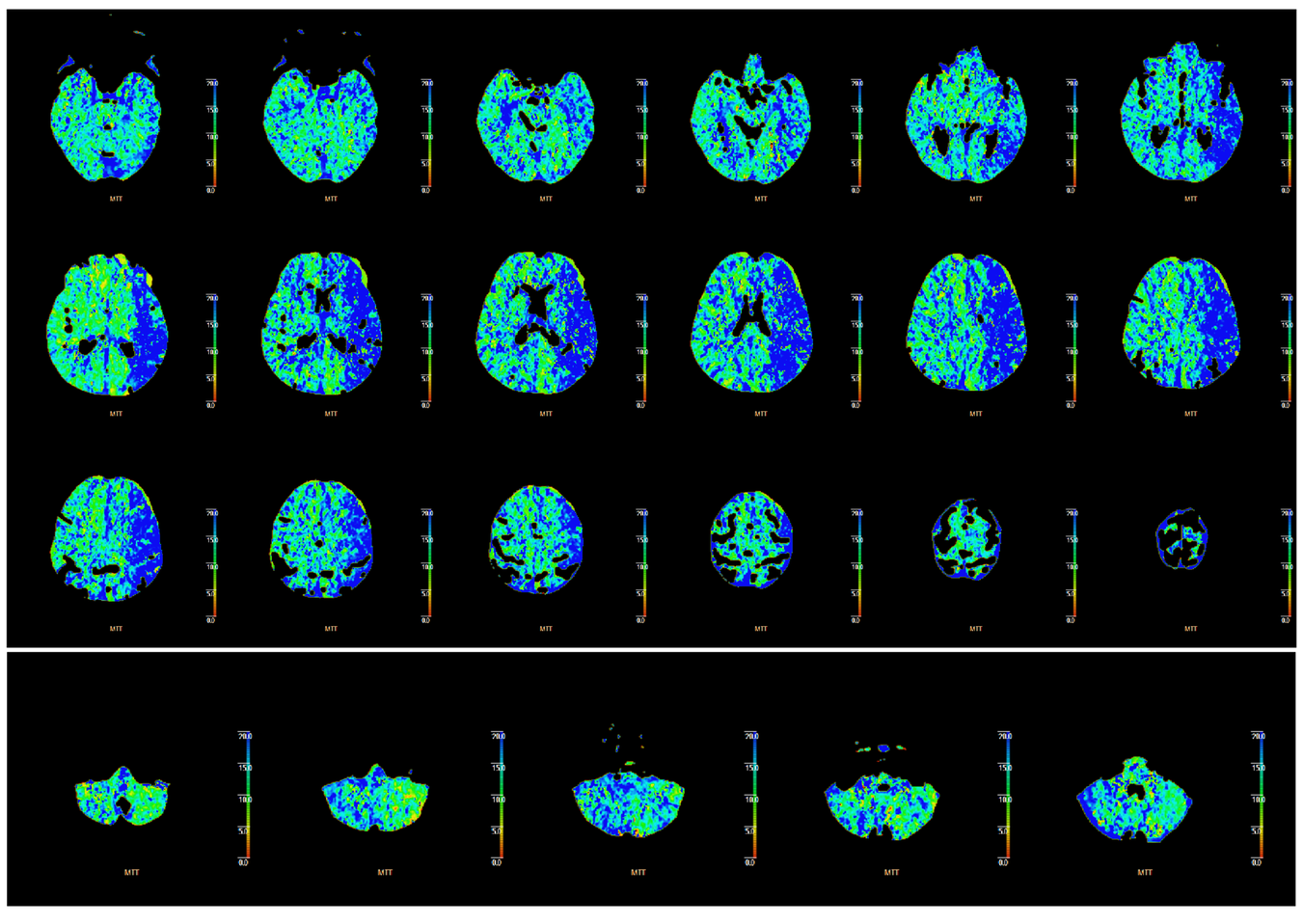
A lot of studies evaluated the presence and functional relevance of crossed cerebellar diaschisis (CCD) in stroke patients, mainly using PET imaging. Just a few studies were conducted using Perfusion-CT maps, revealing CCD in almost 40% of patients, with little correlation with outcome measures. In all these studies Perfusion-CT data were visually inspected and therefore potentially biased.

MATERIALS AND METHODS

We aimed at analyzing CCD in MTT Perfusion maps using a complex segmentation region-growing algorithm, in ten consecutive first-ever ischemic stroke patients with no extracranial vessel occlusion and that did not undergo any acute therapy (Thrombolysis or Thrombectomy), presenting with a middle cerebral artery infarction. CCD was defined as the percentual difference between mean contralateral (to stroke lesion) and ipsilateral MTT activity/mean ipsilateral MTT activity, found in the whole segmented cerebellum. Clinical and demographic data were acquired for every patient and subsequent correlation analysis were performed.

RESULTS

The mean age of the selected cohort was 74.6 yrs (± 12 yrs); 50% percent of patients were females. The Median NIHSS on admission was 6.5 (range 2-22) and 2.5 on discharge (range 0-20). CCD was found to be >5% in 5 patients (50%) and it showed a trend towards positive correlation with NIHSS score on admission.



Crossed cerebellar diaschisis (CCD) in stroke patient, analyzed with MTT perfusion maps

CONCLUSIONS

In our study we confirm the presence of functional CCD in 50% of patients admitted with acute cerebral infarction in middle cerebral artery with no extracranial occlusion, in line with previous studies; this is the first study inspecting CCD in the whole segmented cerebellum and thus less prone to selection or analysis bias.
A positive trend correlation was observed between NIHSS and CCD, thus the higher the neurological disability on admittance, the higher the CCD.