End-tidal carbon dioxide

End-tidal carbon dioxide (ETCO2) is the level of carbon dioxide that is released at the end of an exhaled breath. ETCO2 levels reflect the adequacy with which carbon dioxide (CO2) is carried in the blood back to the lungs and exhaled.

A retrospective review was conducted of consecutive patients from March 2020 to June 2021 who underwent mechanical thrombectomy for acute anterior circulation ischemic stroke under general anesthesia and achieved successful recanalization (Thrombolysis in Cerebral Infarction TICI ≥ 2b). Only patients with CT perfusion, procedural ETCO2, and postoperative MRI data were included. Segmentation software was used for multi-parametric image analysis. normocapnia defined as mean ETCO2 of 35 mmHg was used to dichotomize subjects. Univariate and multivariate statistics were applied.

Fifty-eight patients met criteria for analysis. Of these, 44 had TICI 3 recanalization, 9 had TICI 2c, and 5 had TICI 2b. Within this combined recanalization group, patients with mean ETCO2 > 35 had significantly higher rates of functional independence at 90 days. Although patients tended to salvage more penumbra and experience smaller final infarcts when ETCO2 exceeded 35 mmHg, this did not reach statistical significance.

Stroke patients who underwent successful thrombectomy with general anesthesia achieved higher rates of functional independence when procedural ETCO2 exceeded 35 mmHg. Further studies to confirm this effect and investigate optimal ETCO2 parameters should be considered [1)]

1)
Parr MS, Salehani A, Ogilvie M, Ethan Tabibian B, Rahm S, Hale AT, Tsemo GB, Aluri A, Kim J, Mathru M, Jones JGA. The effect of procedural end-tidal CO2 on infarct expansion during anterior circulation thrombectomy. Interv Neuroradiol. 2022 Dec 4:15910199221143175. doi: 10.1177/15910199221143175. Epub ahead of print. PMID: 36464668.