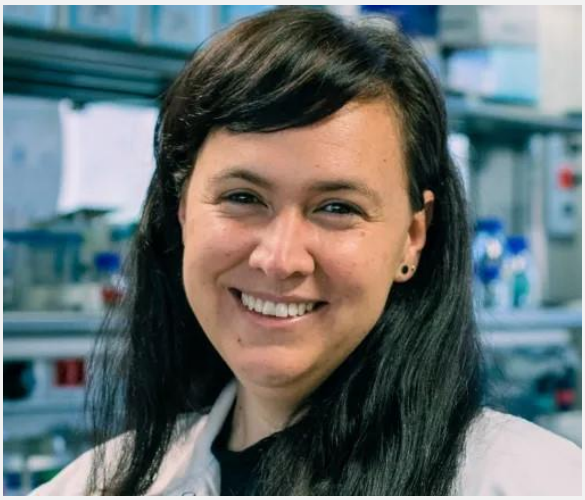
Wykład CXXXVI JCET, 03.10.2023 r.

Deciphering the vascular component of Alzheimer's disease



Prof. Marta Cortes Canteli

Miguel Servet Research Fellow

Instituto de Investigacion Sanitaria Fundacion Jimenez Diaz (IIS-FJD)

Centro Nacional de Investigaciones Cardiovasculares Carlos III (CNIC),

Madrid, Spain

Short summary

In 2015, Dr Cortes-Canteli moved to the Spanish National Center for Cardiovascular Research (Madrid, Spain) and set up a new line of research in the Center focused on studying the heart-brain connection in neurodegenerative disorders with two main approaches:

1) Develop individualized diagnostic and therapeutic strategies to target the pro-coagulant state in AD and its immuno-thrombotic and neuroinflammatory implications. Dr Cortes-Canteli has shown how long-term anticoagulation with dabigatran inhibited thrombin and the formation of occlusive thrombi, preserved cognition, cerebral perfusion, and blood brain barrier function and ameliorated neuroinflammation and amyloid deposition in AD mice;

2) Decipher the mechanisms underlying the crosstalk between cerebral and cardiovascular diseases during preclinical stages. Dr Cortes-Canteli recently

demonstrated an association between subclinical atherosclerosis and cardiovascular risk with hypometabolism in AD brain regions of asymptomatic individuals in their 50´s. Her results open a field for future investigation on whether the use of direct oral anticoagulants might be of therapeutic value in AD and prove that early diagnosis and primary prevention are of the utmost importance to decrease disease burden.

List of the most relevant publications:

1. **Cortes-Canteli, M.*** et al. 2019. Long-term dabigatran treatment delays Alzheimer's disease pathogenesis in the TgCRND8 mouse model. J. Am. Coll. Cardiol.74: 1910–23. PMID: 31601371.*Corresponding author. Highlighted in:

a. Editorial Comment: M. Sharma. 2019. J. Am. Coll. Cardiol. 74: 1914–25.

b. National (El País; EFE; La Vanguardia;ABC; El Mundo;El Huffington Post; EL ESPAÑOL; LaSexta; TVE1; TELEMADRID; TVE24H; RNE; SER; COPE; ONDA CERO...) and international media (MedicalResearch.com; MedicalNewsToday; being patient)

c. Article selected as one of the 2019 Editor-In-Chief´s Top Picks and for being translated into Spanish as part of the J. Am. Coll. Cardiol Spanish Edition (Mar 2020, 11).

d. Research awarded with the 2nd prize of the Spanish Breakthrough of the year 2019 "X Edición Premio Vanguardia de la Ciencia".

e. Invitation to contribute to: The Science Breaker: Treating Alzheimer's disease with a known anticoagulant: insights from lab mice. https://doi.org/10.25250/thescbr.brk357.

2. **Cortes-Canteli, M**.* & Iadecola, I. 2020. Alzheimer's Disease and Vascular Aging. Invited Review JACC Focus Seminar series "Vascular Aging". J. Am. Coll. Cardiol.75: 942–51. PMID: 32130930. *Corresponding author.

3. **Cortes-Canteli, M**., Gispert, J.D. et al. 2021. Subclinical atherosclerosis and brain metabolism in midlife. The PESA study. J. Am. Coll. Cardiol.77: 888–98. PMID: 33602472.Highlightedin:
   a. Editorial Comment: N.S. Parikh & R.F. Gottesman. 2021. J. Am. Coll. Cardiol. 77: 899–901.
   b. National: EFE; La Vanguardia; ABC; La Razón... and International Media: PET scans show early link between heart disease, brain function (auntminnie.com); New Atlas; Sciences et Avenir; Medpage Today... - Clemente-Moragon, A., Oliver, E. ...

4. **Cortes-Canteli, M**., Desco, M. & Ibanez, I. 2023. Neutrophil β1 adrenergic receptor blockade blunts stroke-associated Neuroinflammation. Br. J. Pharmacol. 180: 459-478. PMID: 36181002.

5. Toribio-Fernandez, R., Ceron, C..... & **Cortes-Canteli, M**.* 2023.Oral anticoagulants: A plausible new treatment for Alzheimer's disease?Invited Review for the Themed Issue ""From Alzheimer´s Disease to Vascular Dementia: Different Roads Leading To Cognitive Decline". Br. J. Pharmacol. Online ahead of print. PMID:36633908.*Corresponding author.

6. Fuster, V., Turco, J.V. & **Cortes-Canteli, M**. 2023. Cardiovascular Health in the elderly – Beware of the brain.J. Am. Coll. Cardiol. 81:1214-15.PMID: 36948739.

7. Tristão-Pereira C. ... Gispert J.D.* & **Cortes-Canteli M.***2023. Longitudinal interplay between subclinical atherosclerosis, cardiovascular risk factors and cerebral glucose metabolism in midlife: results from the PESA prospective cohort study. The Lancet Healthy Longev. 4:e487-e498.PMID: 37659430. *Corresponding author.