COVID-19 and stroke: What are the pressing challenges?

How we are facing it in Brazil

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Brazilian studies

• Silva MT et al.
  • The impact of the COVID-19 pandemic on a stroke center in Latin America
    • Comparison of stroke incidence from March to May 2019 to 2020

• Nascimento OJM
  • Neurological complications associated with SARS-CoV-2 (COVID-19) in Brazil: Organization of the NEUROCOVID-RIO group and preliminary findings
Brazilian projects

• Brasília University Hospital – Brasília University
  • Glehn F.
    • Acute neurological manifestations associated to SARS-COV-2 vírus

• Tropical Medicine Institute – São Paulo University, Emílio Ribas Infectology Institute, Albert Einstein Israeli Hospital, Fortaleza General Hospital
Continuous challenges during SARS-CoV-2 pandemia

• Proposal of case-control multicentric research on association of SARS-COV-2 with occurrence, prognostic and pathogenesis of cerebrovascular diseases and other neurological manifestations

• Motivation of professionals to cooperate to this proposal

• Specific training of professionals for the proposal

• Implementation of protect code
Continous challenges during SARS-COV-2 pandemia

• Second proposal of case-control multicentric research on immunological and viral dynamics in Restauração Hospital
  • A model for mimicry blood brain barrier
  • Development of a test to determine SARS-COV-2 viral load

• Third proposal of research
  • COVID-19 Neurological Disease: a prospective study in Brazil, India and Malawi
Restauração Hospital – a public hospital

- Caracteristic
  - State Reference for neurological and cerebrovascular diseases

<table>
<thead>
<tr>
<th>Data from August to October</th>
<th>Clinical emergence</th>
<th>Neurological disorders</th>
<th>Percent of neurological disorders</th>
<th>Percent of stroke cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>2019 (patients)</td>
<td>7,029</td>
<td>4,410</td>
<td>62.7</td>
<td>17.0</td>
</tr>
<tr>
<td>2020 (patients)</td>
<td>7,340</td>
<td>4,709</td>
<td>64.2</td>
<td>19.1</td>
</tr>
</tbody>
</table>
Competence diagram of Multicentric Research

Clinical pillar
- Neurology

Laboratorial pillar
- SAR-COV-2 diagnostic
- Experiments

Menagerial pillar

Restauração Hospital - PE
- Emergency and Trauma Hospital - PB
- Surgery Fundation Hospital - SE
- Hospital of Brasília Federal University - DF
- Sainte Marcelina Hospital - SP
- Clinics Hospital - Paulista State University
- Hospital of Goiás Federal University - GO
- Ophir Loyola Hospital - PA
- Saint Jose Hospital - SC

LACEN - PE
- Molecular Applied Vigilance Lab - PB
- LACEN - SE
- LACEN - DF
- LACEN - SP
- Applied Biotechnology LAB of CH - SP
- LACEN - PA
- Molecular Biology LAB of UNIVILLE- SC

LAVITE IAM
- NB3 Lab IAM
- Evandro Chagas Institute - PA
Instruments for data collection

- General data
- COVID data
- Laboratorial exams
- Radiological exams
- Neurological examination and classification
- Scales
  - RANKIN
  - NIHSS
- Stroke Code
WHO COVID-19 case definitions

• **Confirmed - A person with**
  • laboratory confirmation of SARS-CoV-2 infection, irrespective of clinical signs and symptoms;
  • confirmatory tests - a nucleic acid amplification test or a validated antibody test;
  • presence in an area with established circulation of virus - one positive RT-PCR test **or** identification of virus on sequencing (one or more negative tests do not rule out infection if there is clinical suspicion);
  • presence in an area without established circulation of virus, there should be one positive RT-PCR test for two different viral genome targets **or** one positive result with partial or whole genome sequencing

WHO COVID-19 case definitions

• Probable - A suspect case for whom testing for the COVID-19 virus
  • is inconclusive
  • could not be done for any reason

• Suspected - A patient with acute respiratory illness (fever and at least one
  sign or symptom of respiratory distress) associated to:
  • history of travel to or residence in a location reporting community transmission
    of COVID-19 disease during the 14 days before onset
  • contact with a confirmed or probable case in the last 14 days before
    symptom onset;
  • requirement of hospitalisation, in the absence of an alternative explanation
    that fully explains the clinical presentation

situation report, 61
SARS-CoV-2 meningitis, encephalitis, myelitis, or CNS vasculitis

• Confirmed
  • SARS-CoV-2 detected in CSF or brain tissue or evidence of SARS-CoV-2-specific intrathecal antibody and no other explanatory pathogen or cause found

• Probable
  • SARS-CoV-2 detected in respiratory or other non-CNS sample, or evidence of SARS-CoV-2-specific antibody in serum indicating acute infection and no other explanatory pathogen or cause found

SARS-CoV-2 meningitis, encephalitis, myelitis, or CNS vasculitis

• Possible
  • A suspected case definition of COVID-19 according to national or WHO guidance on the basis of clinical symptoms and epidemiological risk factors, in the context of known community SARS-CoV-2 transmission.

• Supportive features include
  • new onset of at least one: cough, fever, muscle aches, loss of smell, or loss of taste
  • lymphopenia or raised D-dimer level; and
  • radiological evidence of abnormalities consistent with infection or inflammation (eg, ground glass changes)

Acute disseminated encephalomyelitis, Guillain-Barré syndrome, and other acute neuropathies associated with SARS-CoV-2 infection

• **Probable association**
  • Neurological disease onset within 6 weeks of acute infection;
  • either SARS-CoV-2 RNA detected in any sample or antibody evidence of acute SARS-CoV-2 infection
  • no evidence of other commonly associated causes

• **Possible association**
  • Neurological disease onset within 6 weeks of acute infection
  • either SARS-CoV-2 RNA detected in any sample or antibody evidence of acute SARS-CoV-2 infection
  • evidence of other commonly associated causes

Stroke associated with SARS-CoV-2 infection

• **Probable association**
  - SARS-CoV-2 detected in CSF or other sample, or evidence of SARS-CoV-2-specific antibody in serum indicating acute infection and
  - no other known traditional cardiovascular risk factors

• **Possible association**
  - Either SARS-CoV-2 detected in CSF or other sample, or evidence of SARS-CoV-2-specific antibody indicating acute infection and
  - other traditional cardiovascular risk factors

Thank you