LIMITATIONS IN MONITORING THE PATIENT WITH HEAD TRAUMA IN EL SALVADOR

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LIMITATIONS IN MONITORING THE PATIENT WITH HEAD TRAUMA IN EL SALVADOR

<table>
<thead>
<tr>
<th></th>
<th>El Salvador</th>
<th>South Korea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area</td>
<td>20,742 Km²</td>
<td>100,210 Km²</td>
</tr>
<tr>
<td>Population</td>
<td>6,340,000</td>
<td>50,424,000</td>
</tr>
<tr>
<td>Density</td>
<td>290</td>
<td>503</td>
</tr>
<tr>
<td>PIB</td>
<td>50,050 millons</td>
<td>1,305 billons</td>
</tr>
<tr>
<td>Health</td>
<td>6.9% of PIB</td>
<td>7.2% of PIB</td>
</tr>
</tbody>
</table>

23 years ago peace was signed after a civil war that lasted about 12 years, during which some 80,000 people approximately.

The salvadoran society is one of the most violent in the world. In recent days there are 20 deaths per day, due to conflicts between gangs and the gangs with the government.

In our country there is not a true record of how many patients with brain injury trauma consults to the hospitals.

The health system of El Salvador has 6 large structures that give support to primary, secondary and tertiary care, National Ministry of Health, private health services, Salvadoran Institute of Social Security, Teachers Health Security and Armed Forces health system.
LIMITATIONS IN MONITORING THE PATIENT WITH HEAD TRAUMA IN EL SALVADOR

- Among the 10 leading causes of hospital care are described arterial hypertension, diabetes mellitus and multiple trauma.

Of diseases related to hospital mortality, 51.9% were due to chronic diseases. 32.9% were due to infectious causes include pneumonia, septic shock and Disease Human Immunodeficiency Virus [HIV], **15.2% and intracranial injuries and multiple trauma injuries requiring surgical care.**

Despite this scenario, higher-level hospitals rarely tend to use neuromonitoring systems, this being a debt with patients sometime require. in addition, there is no official statistical source that describes the current state of neurominitoreo in El Salvador.
National Ministry of Health has 30 hospitals with a total of 1.1 beds per 1,000 population and 0.7 ICU beds per 100,000 population, which clearly shows the precariousness of the hospital system in El Salvador.

Also, the Salvadoran Institute of Social Security has 4 intensive care units with a total of 30 beds in ICU and 22 intermediate care.

The Central Military Hospital, has a Neurotrauma United with 6 beds. It has 4 beds with monitor for ICP measurement.
LIMITATIONS IN MONITORING THE PATIENT WITH HEAD TRAUMA IN EL SALVADOR

- National Ministry of Health:

  Hospital Nacional Rosales:

  - The main focal point of the whole country
  - 29 ICU beds
  - 28 patients incomes per month
  - 20% of that patients with Brain Trauma
  - In the last 6 months, just one patient was in ICP monitor (rustic form)
LIMITATIONS IN MONITORING THE PATIENT WITH HEAD TRAUMA IN EL SALVADOR

- Salvadoran Institute of Social Security:

  Hospital General ISSS:

  - The main focal point for trauma of the Social Security system.
  - 20 ICU beds
  - 70 patients incomes per month
  - 30% of that patients with Brain Trauma
  - In the last 6 month, 30 patients aprox. was in ICP monitor (intraventricular)
LIMITATIONS IN MONITORING THE PATIENT WITH HEAD TRAUMA IN EL SALVADOR

- Salvadoran Institute of Social Security:

  Hospital Médico-Quirúrgico ISSS:
  - The second focal point for trauma of the Social Security system.
  - 24 ICU beds
  - 72 patients incomes per month
  - 10% of that patients with Brain Trauma
  - In the last 6 month, 2 patients aprox. was in ICP monitor (intraventricular)
  - In the last 6 month, 3 patients aprox. was in Jugular Venous Oxygen Saturation (SjvO2)
LIMITATIONS IN MONITORING THE PATIENT WITH HEAD TRAUMA IN EL SALVADOR

- Any patient requiring ICU, whether soldier or family is referred to this center.
- 12 ICU beds
- 4 beds have capacity to measure ICP
- 10% of that patients with Brain Trauma
- In the last 6 month, 3 patients aprox. was in ICP monitor (intraparenchymatous)
LIMITATIONS IN MONITORING THE PATIENT WITH HEAD TRAUMA IN EL SALVADOR

- The private system equivalent to 5-7% of health care in the country.

There are no accurate data on how many patients have been monitored by ICP.

The private system has monitors ICP measurement, but any of them have a unified technology using this protocol.

Multimodal neuromonitoring cases recorded in just 7 cases in the last six months.

Elsewhere in the country, The few hospitals with neuromonitoring systems they do not use it.
LIMITATIONS IN MONITORING THE PATIENT WITH HEAD TRAUMA IN EL SALVADOR

- Most ICU have at least one system but not used neuromonitoring.

  The hospital authorities do not give the necessary importance to neuromonitoring.

  Intensivists do not make enough pressure to develop protocols

  Most neurosurgeons not placed catheters.
A Trial of Intracranial-Pressure Monitoring in Traumatic Brain Injury

CONCLUSIONS

For patients with severe traumatic brain injury, care focused on maintaining monitored intracranial pressure at 20 mm Hg or less was not shown to be superior to care based on imaging and clinical examination. (Funded by the National Institutes
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<table>
<thead>
<tr>
<th>Variable</th>
<th>Pressure-Monitoring Group (N=157)</th>
<th>Imaging-Clinical Examination Group (N=167)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age — yr</td>
<td>29</td>
<td>29</td>
</tr>
<tr>
<td>Interquartile range</td>
<td>22—44</td>
<td>22—44</td>
</tr>
<tr>
<td>Male sex — no. (%)</td>
<td>143 (91)</td>
<td>140 (84)</td>
</tr>
<tr>
<td>Transferred from another hospital — no./total no. (%)</td>
<td>97/157 (62)</td>
<td>101/166 (61)</td>
</tr>
<tr>
<td>Time to admission to study hospital — hr</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Median</td>
<td>3.5</td>
<td>2.9</td>
</tr>
<tr>
<td>Interquartile range</td>
<td>1.3—8.3</td>
<td>1.0—6.5</td>
</tr>
<tr>
<td>Direct admissions</td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>Transfers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Median</td>
<td>6.3</td>
<td>5.0</td>
</tr>
<tr>
<td>Interquartile range</td>
<td>3.3—12.2</td>
<td>2.8—9.8</td>
</tr>
<tr>
<td>Time to admission to first hospital</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Median</td>
<td>3.0</td>
<td>2.5</td>
</tr>
<tr>
<td>Interquartile range</td>
<td>1.1—6.6</td>
<td>1.3—6.3</td>
</tr>
<tr>
<td>Glasgow Coma Scale at randomization — motor score</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Median</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Interquartile range</td>
<td>3—5</td>
<td>3—5</td>
</tr>
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</table>

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• Challenges

1. Convince the authorities that it is not a luxury; it is an urgent need to resolve.

2. Develop protocols for using methods neuromonitoring

3. Establish links with neurosurgeons to establish protocols to place ICP.

4. All ICU must have ICP measurement methods.
THANK YOU