Post-stroke depression in the Africans

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Plan

1. Generalities about post-stroke depression
2. Post-stroke depression in the Africans
1. Generalities
History

• Recognized by psychiatrists for more than 100 years

• Controlled systematic studies began in the 1970s.

• Folstein and al., demonstrated that depression was significantly more common in patients with stroke compared with patients with comparable physical impairments due to orthopedic injuries.

Definition

- PSD: Depression which occurs after stroke and cannot be ascribed to any other mental illness.

- Also termed *Vascular Depression*= depression associated with cerebrovascular disease.
DSM-V  Depression Diagnosis

5 of the following below for 2 weeks + (1) depressed mood or (2) loss of interest or pleasure.

- **depressed mood** frequently in a day

- markedly **diminished interest or pleasure** in activities

- significant **weight loss** when no dieting or **weight gain**

- **insomnia** or **hypersomnia**

- psychomotor **agitation or retardation**

- **fatigue** or loss of energy

- **feelings of worthlessness** or excessive or inappropriate **guilt**

- **diminished ability to think or concentrate**, or indecisiveness

- **recurrent thoughts of death**, **recurrent suicidal ideation**
# Depression: Young vs Elderly

<table>
<thead>
<tr>
<th></th>
<th>Younger patients</th>
<th>Elderly patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depressed mood</td>
<td>+++</td>
<td>+(+)</td>
</tr>
<tr>
<td>Cognitive impairment</td>
<td>+</td>
<td>+++</td>
</tr>
<tr>
<td>Retardation</td>
<td>++</td>
<td>++</td>
</tr>
<tr>
<td>Somatic symptoms</td>
<td>+</td>
<td>+++</td>
</tr>
<tr>
<td>Anxiety</td>
<td>+(+)</td>
<td>+++</td>
</tr>
<tr>
<td>Psychotic symptoms</td>
<td>(+)</td>
<td>++</td>
</tr>
<tr>
<td>Hypochondria</td>
<td>+</td>
<td>++</td>
</tr>
</tbody>
</table>

PSD subtypes

- **Early PSD**: within 3 months of the stroke
  - Somatic signs of depression
  - Earlier onset of melancholy
  - Social withdrawal
  - Amotivation

- **Late PSD**: anytime after 3 months of the stroke
Increased risk for PSD

- Age
- Female gender
- Single living
- Unable to return to work
- Social activities
- Change in ability to communicate
- Stroke severity
- Prior history of depression
- Genetic factors: 5-HTTLPR and the STin2 VNTR polymorphisms of the serotonin transporter gene (SERT)
Does Lesion location predict PSD?

- Multiple studies suggest:
  - Left frontal lobe
  - Basal ganglia
  - Left hemisphere >> Right hemisphere

- Multiple reviews do not demonstrate an association between lesion site and development of PSD.
What makes diagnosis difficult?

- Signs of depression overlap with stroke
- Depression complaints are more vague
- Lack of properly trained personnel
- Lack of assessment tools for diagnosis
Assessment of PSD

- Clinical interview and history
- Collateral information from family and caregivers
- Observational standardized screening measure
- Self-reports standardized screening measure when appropriate
Differential Diagnosis

- Hypoactive Delirium
- Adjustment Disorder
- Aboulia (particularly with frontal strokes)
- Dementia
- Pseudobulbar affect
Frequency of PSD

- The frequency of PSD has been studied in many countries of the world.

- The most recent meta-analysis of 61 cohorts including 25,488 patients reported that 31% of patients developed depression within the 5 years following stroke.

Etiological Mechanisms (1)

- Role of psychological, social, and biological factors
- Stroke severity, degree of functional physical and cognitive impairment
  - Alterations in ascending monoamine systems
  - Hypothalamic-hypophysial axis abnormalities,
  - Disruption of prefrontal-subcortical circuits,
  - Alterations in neuroplasticity and in glutamate neurotransmission
  - Excess of proinflammatory cytokines
Etiological Mechanisms (2)

However, a pathophysiological hypothesis of PSD that can integrate these changes into a coherent explanatory model has yet to be formulated.
Mortality

- Patients with PSD are 3-4 times more likely to die during a 10 years period after stroke than those without depression.

- Patients with PSD and few social contacts have an even increased mortality rate.
Treatment of PSD (1)

- A meta-analysis of 16 randomized controlled trials (12 using antidepressants and 4 evaluating the efficacy of psychotherapy) that included 1,655 patients found:
  - a significant beneficial effect of antidepressant medication (SSRIs),
  - whereas psychotherapy was not more effective than a control intervention.

Brief psychosocial therapies, that place emphasis on care management, psycho-education, and family support can be beneficial to treat or prevent PSD in combination with antidepressant treatment.


2. PSD in the Africans
Overview

• Few studies were done in Africa (Nigeria, Tanzania, BF, RCA, RDC, Ouganda)

• Methods used are not homogeneous

• Hospital studies with small samples of patients

• The diagnostic criteria are based on different scales

• Variables of the studies are not always the same
Methodological features of African Studies (1)

<table>
<thead>
<tr>
<th>Countries</th>
<th>Numbers of studies</th>
<th>Years</th>
<th>Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nigeria</td>
<td>3</td>
<td>2009, 2013, 2014</td>
<td>Cross-sectional study, Cross-sectional study, Case-Control study</td>
</tr>
<tr>
<td>Tanzania</td>
<td>1</td>
<td>2011</td>
<td>Cross-sectional study</td>
</tr>
<tr>
<td>Burkina Faso</td>
<td>1</td>
<td>2012</td>
<td>Prospective cohort study</td>
</tr>
<tr>
<td>Democratic Republic of Congo</td>
<td>2</td>
<td>2014</td>
<td>Cross-sectional study, Prospective cohort study</td>
</tr>
<tr>
<td>Central African Republic</td>
<td>1</td>
<td>2014</td>
<td>Case-Control study</td>
</tr>
<tr>
<td>Ouganda</td>
<td>1</td>
<td>2015</td>
<td>Cross-sectional study</td>
</tr>
</tbody>
</table>
### Methodological features of African Studies (2)

<table>
<thead>
<tr>
<th>Countries</th>
<th>Diagnostic criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nigeria</td>
<td>Depression Anxiety Stress Scale - 21 (DASS - 21)</td>
</tr>
<tr>
<td></td>
<td>DSM 4</td>
</tr>
<tr>
<td></td>
<td>Schedules for clinical Assessment in Neuropsychiatry (SCAN)</td>
</tr>
<tr>
<td>Tanzania</td>
<td>Hospital Anxiety and Depression Questionnaire (HAD)</td>
</tr>
<tr>
<td>Burkina Faso</td>
<td>DSM 4</td>
</tr>
<tr>
<td></td>
<td>Montgomery and Asberg Depression Rating Scale (MADRS)</td>
</tr>
<tr>
<td>Democratic Republic of Congo</td>
<td>Patient Health Questionnaire (PHQ9)</td>
</tr>
<tr>
<td>Central African Republic</td>
<td>Montgomery and Asberg Depression Rating Scale (MADRS)</td>
</tr>
<tr>
<td>Ouganda</td>
<td>Patient Health Questionnaire (PHQ9)</td>
</tr>
</tbody>
</table>
## Demographic data (1)

<table>
<thead>
<tr>
<th>Countries</th>
<th>Nb Stroke patients</th>
<th>Frequency PSD (%)</th>
<th>Mean age</th>
<th>Sex ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nigeria</td>
<td>130</td>
<td>41.5</td>
<td>59</td>
<td>0.8</td>
</tr>
<tr>
<td>Burkina Faso</td>
<td>165</td>
<td>38.9</td>
<td>57</td>
<td>0.9</td>
</tr>
<tr>
<td>D. R. Congo</td>
<td>56</td>
<td>21.4</td>
<td>54</td>
<td>1.6</td>
</tr>
<tr>
<td>Central African Republic</td>
<td>35</td>
<td>88.6</td>
<td>49</td>
<td>1.4</td>
</tr>
<tr>
<td>Ouganda</td>
<td>73</td>
<td>31.5</td>
<td>60</td>
<td>0.5</td>
</tr>
</tbody>
</table>
Demographic data (2)

As shown on the tables above, in all countries the frequency of PSD is high with significant variations between countries. This can be explained by:

- the use of various tools by individual studies,
- the presence of other causes of depression and possible differences in how samples were enrolled,
- the complexity of stroke patients for whom ordinary tools for depression may not be appropriate.
Time of occurrence (1)

- Very variable and depends on the methodology used in the various studies

- However, according to the studies the occurrence is relatively early:
  - In our study, the time of occurrence was early (less than or equal to 30 days) in 73% of cases.
  - In Uganda, PSD was commonly seen among participants who had the assessment done within 3 months after onset of stroke (56.5%), compared to those beyond 3 months.
Time of occurrence (2)

- Those results would find their explanations in:
  - the stress of new hospital life
  - the sudden and unexpected characters of the deficit installation
  - the dismay and great concern that surround the patient and his relatives during the acute phase
Severity of PSD (1)

• According to the MADRS in our study,
  - 43/65 (66 %) PSD were in mild depression
  - 19/65 (30 %), in moderate depression
  - severe depression with suicide attempt in 3 patients (4 %)

Severity of PSD (2)

Table 3  Distribution des sujets déprimés de l’étude en fonction de l’intensité de la dépression / Distribution of depressed subjects of the study based on the intensity of depression.

<table>
<thead>
<tr>
<th>Caractéristiques</th>
<th>Cas (n=31)</th>
<th>Témoins (n=20)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type dépression</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Homme</td>
<td>6 (66,7)</td>
<td>4 (64,3)</td>
</tr>
<tr>
<td>Femme</td>
<td>3 (33,3)</td>
<td>2 (33,3)</td>
</tr>
<tr>
<td>&lt; 50 ans</td>
<td>7 (77,8)</td>
<td>10 (71,4)</td>
</tr>
<tr>
<td>&gt; 50 ans</td>
<td>2 (22,2)</td>
<td>2 (33,3)</td>
</tr>
</tbody>
</table>

Severity of PSD (3)

In Ouganda, among seventeen non-aphasic subjects with depression,
- twelve (70.6%) had mild depression,
- four (23.5%) had minimal symptoms of depression
- one (5.9%) had moderately severe depression.
- None was found to have severe depression

Gyagenda and al. Post-stroke depression among stroke survivors attending two hospitals in Kampala
Severity of PSD (4)

• In Africa, all the studies show that the PSD is relatively moderate
  - Are those observations related to assessment methods?
  - Efficient device of psychological support (interpersonal psychotherapy)
  - Remarkable interpersonal solidarity
**Risk factors of PSD (1)**
*Functional and cognitive impairment*

<table>
<thead>
<tr>
<th>Countries</th>
<th>Disability (%)</th>
<th>Cognitive impairment (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nigeria</td>
<td>86</td>
<td>26.2</td>
</tr>
<tr>
<td>Burkina Faso</td>
<td>96</td>
<td>24</td>
</tr>
</tbody>
</table>

1. A. Ojagbemi et al. / Post-stroke major depression in Nigeria
Risk factors of PSD (2)
Functional and cognitive impairment

- The severity of disability **was found to be significantly related to PSD** in 16 out of 18 studies reviewed by Hackett and Pickles and in 24 out of 30 studies reviewed by Johnson et al.


- The relationship between PSD and cognitive impairment (especially executive dysfunction) has been well established

Risk factors of PSD (3)
Stroke characteristics and lesion location

**Brain DT Scan**: Left hemisphere: 38 patients (58.5%)
Right hemisphere: 27 patients (41.5%).

*Distribution of the vascular lesions*

- Ischemic stroke: 54%
- Hemorragic stroke: 45%
- Cerebral venous thrombosis: 1%

Risk factors of PSD (4)
Stroke characteristics and lesion location

- Recent systematic reviews argue against an association between PSD and the type or the mechanism of stroke.

- Left frontal or left basal ganglia has been extensively investigated as a risk factor for PSD. This correlation has not been done by the africans studies.
## Risk factors of PSD (5)

### Medical and psychiatric history

<table>
<thead>
<tr>
<th>Medical History</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypertension</td>
<td>107</td>
<td>82.3</td>
</tr>
<tr>
<td>Diabetes</td>
<td>24</td>
<td>18.5</td>
</tr>
<tr>
<td>Other Physical Condition (e.g. obesity and heart diseases)</td>
<td>4</td>
<td>3.1</td>
</tr>
<tr>
<td>Medication Use (Anti-hypertensives, anti-diabetics, anti-coagulant, et.c)</td>
<td>99</td>
<td>76.2</td>
</tr>
<tr>
<td>Family History (Stroke, Hypertension, Diabetes)</td>
<td>49</td>
<td>37.7</td>
</tr>
<tr>
<td>Alcohol Use</td>
<td>34</td>
<td>26.2</td>
</tr>
<tr>
<td>Psychosocial Stressors</td>
<td>102</td>
<td>78.5</td>
</tr>
</tbody>
</table>

A. Ojagbemi et al. / Post-stroke major depression in Nigeria
Risk factors of PSD (6) 
Medical and psychiatric history

• Hypertension and hypercholesterolemia appear to have no relation with PSD.

• Patients with PSD might be more likely to have a history of diabetes mellitus.

• A personal or a family history of depression or anxiety or both was also consistently identified as a risk factors for PSD.
Risk factors of PSD (7)
Social support

- The number of social ties was shown to be inversely correlated with the severity of PSD

- The lack of social support at admission was associated with the onset of PSD at 3-months follow-up.

Treatment (1)

- Few African studies have addressed therapeutic aspects of the disease
- In our study, many associations of the treatment were found.
Treatment (2)

Distribution of PSD according to the medical treatment

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Numbers</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paroxétine</td>
<td>13</td>
<td>46.5</td>
</tr>
<tr>
<td>Amitriptyline</td>
<td>2</td>
<td>7,2</td>
</tr>
<tr>
<td>Méprobamate</td>
<td>1</td>
<td>3.5</td>
</tr>
<tr>
<td>Psychotherapy only</td>
<td>9</td>
<td>32.1</td>
</tr>
<tr>
<td>Psychotherapy + Amitriptyline</td>
<td>1</td>
<td>3.5</td>
</tr>
<tr>
<td>Psychotherapy + Paroxétine</td>
<td>2</td>
<td>7.2</td>
</tr>
<tr>
<td>Total</td>
<td>28</td>
<td>100</td>
</tr>
</tbody>
</table>

Evolution in 2 months after hospitalization has been appreciated in 31/65 patients in our study.

34/65 others did not comply with their follow-up consultation:

- 22/65 patients always had PSD
- 9/35 were no more depressed

Evolution (2)

- Two months after the introduction of antidepressant treatment, there has been a sharp loss in terms of number of patients followed. There are many reasons:
  - **Financial and geographical access** of medicines
  - **Other types of medication including traditional** lead patients to abandon the treatment
  - **Cost of the treatment** combining with other medications is quickly depleting patients not covered by insurance

Conclusion

- PSD is common in Africans but appears to be of mild severity in the majority of cases

- It compromises functional prognosis, and increases the risks of morbidity and mortality

- It occurs early after stroke in the majority of cases, and it is connected to some encephalalic locations

- PSD should be sought systematically in all post-stroke hemiplegic patients, in the early phase
Thank you