Memory & Cognitive dysfunction in Depression

• Depression impact on Memory
  • Lessons from elderly subjects
  • In Daily Practice

Memory disorders in major depressive episodes have attracted much interest with the development of cognitive models that distinguish between:

• Implicit Memory an unconscious and automatic form of memory

• Explicit Memory a conscious, strategy form that requires the intervention of controlled processes
Initial results suggest the existence of a specific impairment of explicit memory that takes the form of a degradation of the conscious system.

But not for all the explicit tasks.

The differences between depressed patients and control participants seem to be greater in free recall than in cued recall tasks (Cohen et al., 1982) or in recognition (Fossati et al, 2004).

Recall is poorer in depressed patients when they are required to develop elaborate strategies during the encoding phase.

Several studies (Beato & Fernández, 1995; Jenkins & McDowall, 2001) provide arguments in favor of the functional theories of Memory with:

- The impairment of the conceptually-driven
- Preservation of the data-driven processes

In a Recall task, the subject first generates the candidate items that have previously been activated and then seeks the candidate that was seen during the encoding phase (generation-recognition mode).
Which image has been presented previously?

In recognition task the search mechanism is replaced by a faster mechanism (a process based on a feeling of familiarity)

Attention

Depression is associated with greater memory impairment in contexts in which:
- attention is not constrained by the task
- increased cognitive effort is required
- attention is easily allocated to personal concerns and other thoughts that are irrelevant to the task

• The Remember Know paradigm has been used in two studies (Ramponi et al., 2004; Drakeford et al., 2010).
• Depressed patients displayed lower levels of Remember for verbal and neutral facial stimuli contrary to Know judgments, and these memory performances were related to the number of past depressive episodes.
• These results support the hypothesis that memory deficits in depressed patients are associated with a deficient recollection and a preserved familiarity processes
Emotionally valenced material has been used in order to evaluate the cognitive processing performed by subjects with regard to words with a positive, negative or neutral affective valence.

Depressed patients spontaneously recall more negative than positive memories.

Very few studies have addressed the role of clinical characteristics (anxiety, emotional blunting, self interest...) on the memory performances of depressed patients.

- Depression impact on Memory
- Lessons from elderly subjects
- In Daily Practice

The classical Depressive Symptoms

- Social isolation / withdrawal
- Fatigue / loss of energy
- Retardation (weight, motivation)
- Disruption in appetite
- Disruption in sleep
- Irritability
- Anxiety
- Poor, somatic complaints
- Diminished interest
- Sadness
- Low self esteem
- Guilty
- Pessimistic
- Worthlessness, Hopelessness
Depression in the elderly

- Start late, without depressive history
- Sadness and depressed mood not the most major symptoms
- Somatic, cognitive complaints, pain are frequent
- Anxiety, irritability are also frequent
- Apathy frequent
- Tend to follow fluctuating course overtime
- Risk factors

Explicit and implicit memory in late-life depression (Elderkin-Thompson & al, 2011)

- 2 year cross-sectional study of elderly depressed (n = 112) and nondepressed (n = 138)
- Depressed patients showed deficits in attention and processing, executive function, and immediate explicit recall.
- No difference for Implicit learning
- Semantic Moderately depressed patients demonstrate a pattern of cognitive deficits suggestive of mild frontal dysfunction during recall tasks.
- Their retention of material over a delay period and their intact language skills indicate medial hippocampal function close to controls.

Depression in AD & related disorders

- Increases the burden of caregivers,
- Has a significant economic impact,
- Is associated with a greater decline in quality of life, earlier institutionalization and increased risk of mortality
- Associated with other neuropsychiatric symptoms
- Fluctuating overtime
- Associated with apathy
Behavioral symptoms in AD

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Critéres Diagnostic Apathie**

Loss of or diminished motivation in comparison to the patient's previous level of functioning and which is not consistent with his age or culture.

These changes in motivation may be reported by the patient himself or by the observations of others.

---

Depression

- Sadness
- Low self esteem
- Guilty
- Pessimistic
- Worthlessness, Hopelessness

Apathy

- Loss of interest
- Fatigue
- Withdrawal
- Cognition
- Irritability
- Loss of interest

Lack of Interest

- Inability to experience pleasure from activities usually found enjoyable
Apathy & depression in mild AD, a cross sectional study using diagnostic criteria

Benoit et al., 2012

N = 734; Age=80±6.6 years; M/F=38/62%; MMSE = 23.1 ± 2.2

Apathy & depression in mild AD, a cross sectional study using diagnostic criteria

Benoit et al., 2012

N = 734; Age=80±6.6 years; M/F=38/62%; MMSE = 23.1 ± 2.2

Apathy & depression in mild AD, a cross sectional study using diagnostic criteria

Benoit et al., 2012

N = 734; Age=80±6.6 years; M/F=38/62%; MMSE = 23.1 ± 2.2

Apathy & depression in mild AD, a cross sectional study using diagnostic criteria

Benoit et al., 2012

N = 734; Age=80±6.6 years; M/F=38/62%; MMSE = 23.1 ± 2.2

Circadian variability in daytime motor activity

Benoit et al., 2012

N = 734; Age=80±6.6 years; M/F=38/62%; MMSE = 23.1 ± 2.2

Circadian variability in daytime motor activity

Benoit et al., 2012

N = 734; Age=80±6.6 years; M/F=38/62%; MMSE = 23.1 ± 2.2

Circadian variability in daytime motor activity

Benoit et al., 2012

N = 734; Age=80±6.6 years; M/F=38/62%; MMSE = 23.1 ± 2.2
Behavioral symptoms in MCI

<table>
<thead>
<tr>
<th></th>
<th>MCI</th>
<th>Mayo</th>
<th>HK</th>
<th>NC Mayo</th>
<th>NC HK</th>
</tr>
</thead>
<tbody>
<tr>
<td>rCDR</td>
<td>NPI</td>
<td>NPK</td>
<td>NPK</td>
<td>NPK</td>
<td>NPK</td>
</tr>
<tr>
<td>0.4</td>
<td>0.4</td>
<td>0.4</td>
<td>0.4</td>
<td>0.4</td>
<td>0.4</td>
</tr>
<tr>
<td>0.7</td>
<td>0.7</td>
<td>0.7</td>
<td>0.7</td>
<td>0.7</td>
<td>0.7</td>
</tr>
</tbody>
</table>

- Delusion
- Hallucination
- Agitation
- Depression
- Anxiety
- Apathy
- Depression
- Inability
- AMS
- Sleep

Evolution of a cohort of 245 MCI patients

- Mean age = 72 ± 5.5 / mean MMSE= 27.5 ± 1.3

Behavioral assessment

- With and without apathy
- With and without anxiety
- With and without depressive symptoms

Selective & Cue reminding test

1 year assessment

Robert & al. & al, 2006

Without

With Apathy
Lack of interest

Switch MCI → MA at 3 years n = 59 (27.6%)

Switch MCI → AD at 2 years
8% for MCI with depression
19% for MCI with depression & apathy
24% for MCI without depression & apathy
60% for MCI with apathy

• Depression impact on Memory
• Lessons from elderly subjects
• In Daily Practice

ASSESSMENT & DIAGNOSIS
• Always assess memory & cognition (attention, processing & executive functions) in patients consulting for depressive symptoms
• Assessment needs to stress the depressive cognitive characteristics (eg: explicit, implicit, affective valence control, limitation of anxiety)
• Always assess behavioral & mood disturbances during a cognitive screening
• Don’t forget to assess specifically the presence of apathy (using subjective & objectives tools)
Treating & Counseling

- Control of vascular risk factors
- Social needs
  - Encourage and facilitate social interactions
  - Discuss driving & home safety
  - Provide for community resources for patients and caregivers

Beneficial Behaviors

- Motivation is the key
- Target the personal patients interests in order to engage in mental & physical activities
- Consider ICT as a tool