Does my older cancer patient have cognitive impairment?

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1. Introduction

Cognition, or higher cortical function, is an umbrella term for various human abilities such as memory, language, executive function and praxis. Cognitive abilities are highly individual in adult life, which should be taken into account when evaluating if impairment has occurred. It is also important to acknowledge individual variability in milder stages of cognitive impairment but in the more advanced stages, dementia, individual variability decreases. The prevalence of cognitive impairment increases with age but differs from study to study based on the population studied and the tools used for evaluation. Most epidemiological studies have focused on dementia which is the most severe form of cognitive impairment, ranging from subjective cognitive impairment to severe dementia. The mildest stages of cognitive impairment are sometimes reversible but in more severe stages, there is brain damage of some kind, most frequently caused by neurodegenerative disorder such as Alzheimer’s disease. Therefore, some kind of evaluation of cognition should be offered to all older individuals with cancer and in need for intervention. In this evaluation, information should also be sought from a close relative. In the earlier stages of cognitive impairment, the individual usually retains ability to give consent and understands information given but in later stages of dementia, a surrogate decision maker is needed. In milder stages of dementia, an individual evaluation is needed for decision making that any change is caused by cognitive impairment, but in the more advanced stages, the person is independent. Many of those seeking help for cognitive impairment are in this stage and MCI is getting increased attention in the literature.

When categorizing cognitive impairment, it is helpful to use a staging system and as an example the Global Deterioration Scale (GDS) [5] is used here, a simple staging scale which crudely divides the condition into seven stages from normal condition (stage 1) to very severe dementia (stage 7) (Table 1).

2. The Different Stages of Cognitive Impairment

The mildest stage of cognitive impairment, Subjective Cognitive Impairment (SCI, GDS stage 2) does not cause practical problems for the individual. At this stage, the person experiences some difficulties in memory, language or other aspects of cognition but he or she is coping well and family members are not confirming that any change has occurred. SCI has a multitude of causes, many of them temporary but this is also the earliest stage of neurodegenerative disorder.

The next stage, Mild Cognitive Impairment (MCI, GDS stage 3) is defined as a condition with memory impairment (or other cognitive changes) that is experienced by the individual and a close relative confirms, but there is no dementia [6]. The individual uses various coping mechanisms such as a calendar for daily tasks and avoids complicated situations, but the person is independent. Many of those seeking help for cognitive impairment are in this stage and MCI is getting increased attention by the research community as irreversible brain damage.
changes are limited at this stage and if progression of cognitive impair-
ment could be halted at this stage, the individual would benefit greatly.
The individual is legally competent at this stage and is able to understand
information given and to make decisions when asked to sign consent
forms for medical or surgical intervention.

Dementia is defined as loss of intellectual abilities, such as memory
capacity, that is severe enough to interfere with social or occupational
functioning [7]. The first stage of dementia (GDS stage 4) is reached
when the individual needs assistance and/or direct help with complicated
tasks of daily life such as cooking, going to the store, using a computer and
using the remote on TV, but is still able to take care of basic activities.
When evaluating cognitive impairment, earlier abilities need to be
considered. For example, a male that has never cooked in his life has
to date not deteriorated in that skill even though he is unable to do that
now. At this stage most individuals are legally competent but their abili-
ties to communicate and to properly understand complicated information
is often weakened and important information given to them might be
difficult for them to comprehend. Accordingly, they need help to properly
understand the meaning of consent in therapy. An individual approach to
evaluate this ability is needed and information and help from a close
relative is usually required to make a proper judgment.

In moderate and severe stages of dementia (GDS stages 5, 6 and 7),
the person is generally not able to understand important information
nor able to make proper decisions about his or her treatment and a
legal guardian is needed. The individual should however be involved
in any decision to the extent possible.

3. Causes of Cognitive Impairment

The most prevalent cause of dementia is Alzheimer’s disease. This is
a neurodegenerative disorder that seems to start many years before
symptoms arise and in the earliest stages, the symptoms are very
generally. Today, most persons with Alzheimer’s disease are diagnosed in
the early stage of dementia or even in the stage of MCI when the diag-
nosis needs to be based on biomarkers in addition to clinical evaluation
[8]. Widely accepted biomarkers are changes in Beta-amyloid and tau
protein in the cerebralspinal fluid (CSF), changes in Positron Emission
Tomography (PET) scanning of the brain or evaluation of atrophy of the
medial temporal lobes of the brain on Magnetic Resonance Imaging (MRI) [9]. It is however important to know that a diagnosis of
Alzheimer’s disease will not necessarily make the person unfit to give
consent to intervention or treatment. The stage of the disease is decisive
in this regard and to some extent the type of impairment.

Other less frequent neurodegenerative disorders that cause dementia
are Lewy Body Dementia (LBD), and frontotemporal dementia (FTD).
There are special features of these disorders that merit attention when
considering ability to consent. LBD is often closely linked to Parkinson
dementia but some patients with LBD have subtle or hardly any extra-
pyramidal (Parkinson) signs and may be difficult to diagnose. Other
major symptoms of LBD are visual hallucinations and fluctuation in cog-
nition with intermittent confusion frequently occurring [10]. These pa-
tients often experience delirium post operatively or during a difficult
treatment such as with cancer medications. On the other hand, they
often have quite lucid periods during which their cognitive abilities
are not greatly impaired, at least not in the early stages.

In FTD, the personality itself is often affected and the person’s ability
to make sound judgments is impaired even at early stage of the disease
[11]. As this is the case early in the disease the simple diagnosis of FTD
makes the person unable to consent and a close relative or a legal guar-
idan should always be involved.

4. Evaluation of Cognitive Impairment

It is not unusual for a patient with dementia to be described as lucid
and oriented in some situations such as in an emergency department or
in other brief clinical encountering when there is generally a short time
to cognitively evaluate individuals. In early dementia the individual
usually retains normal skills of communication and cognitive impair-
ment might easily escapes attention. As cognitive impairment is
frequent in old age some assessment of cognition should always be
performed prior to asking for therapeutic consent. For this purpose,
well-validated and short cognitive tests are available. The most
frequently used one is the Mini Mental State Examination (MMSE)
that has been translated into many languages [12]. Currently, there
are many different versions but of note is that the original one is subject
to copyright [13]. The test usually takes 5–10 min to administer. The test
is an evaluation of global cognition but some important parts of
cognition are not covered by the test, insight and judgment being the
most important ones. Another simple global test is the Montreal
Cognitive Assessment (MoCA) [14]. The MoCA is a brief screening tool
for mild cognitive impairment and is more detailed than the MMSE
and takes a little more than 10 min to administer. It has been translated
and validated in many languages [15] but there is the same caveat as for
the MMSE, not evaluating insight and judgment. Another simple test is
the clock drawing test which only needs a white paper and a pen.
Different rating scales are available but the simplest one is the Schulman
rating scale, which gives 0 to 5 points [16]. This test can show visual-
spatial inabilities, apraxia and to some extent frontal lobe derangement.
Apart from direct cognitive evaluation, the examiner needs to assess the
patient’s ability to understand the choice at hand, risks and benefits and
to rationally apply that information to his or her own situation in order
to make a decision. In addition it is also important to discuss with a close

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**Table 1**

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Stage</th>
<th>Signs and symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>No dementia</td>
<td>1 No cognitive decline</td>
<td>The person functions normally, has no memory loss, and is mentally healthy.</td>
</tr>
<tr>
<td>Dementia</td>
<td>2 Subjective cognitive impairment (SCI)</td>
<td>This stage is used to describe normal forgetfulness associated with aging; for example, forgetfulness of names and where familiar objects were left. Symptoms are not evident to loved ones or the physician.</td>
</tr>
<tr>
<td>Dementia</td>
<td>3 Mild cognitive impairment (MCI)</td>
<td>This stage includes increased forgetfulness, slight difficulty concentrating, decreased work performance. People may get lost more often or have difficulty finding the right words. At this stage, a person’s loved ones will begin to notice a cognitive decline.</td>
</tr>
<tr>
<td>Dementia</td>
<td>4 Early dementia</td>
<td>There are difficulties in concentrating, decreased memory of recent events, and difficulties managing finances or traveling alone to new locations. People have trouble completing complex tasks efficiently or accurately and may be in denial about their symptoms. They may also start withdrawing from family or friends, because socialization becomes difficult. At this stage a physician can detect clear cognitive problems during a patient interview and exam.</td>
</tr>
<tr>
<td>Dementia</td>
<td>5 Moderate dementia</td>
<td>There are major memory deficiencies and a need for assistance to complete their daily activities (dressing, bathing, preparing meals). Memory loss is more prominent and may include major relevant aspects of current lives.</td>
</tr>
<tr>
<td>Dementia</td>
<td>6 Severe dementia</td>
<td>The individual requires extensive assistance to carry out daily activities, forgets names of close family members and has little memory of recent events. Many people can remember only some details of earlier life. Incontinence (loss of bladder or bowel control) is a problem in this stage. Ability to speak declines. Personality changes, such as delusions (believing something to be true that is not), compulsions (repeating a simple behavior, such as cleaning), or anxiety and agitation may occur.</td>
</tr>
<tr>
<td>Dementia</td>
<td>7 Very severe dementia</td>
<td>People in this stage have essentially no ability to speak or communicate.</td>
</tr>
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