

4.10 Cognitive Decline

The term cognition can be defined as a group of mental processes, including thinking, learning, memory, awareness, and judgement. It has been described by some as “the ultimate function of the brain.”

Numerous neural networks and neurochemicals are involved in the process of cognition. The dopaminergic, serotonergic, cholinergic, and glutaminergic systems are all thought to play a fundamental role. However, scientists still do not fully understand the complex interactions between these systems and how dysfunctions in them can lead to cognitive decline.

From early perimenopause onward, many women experience a gradual but progressive state of cognitive decline. It may begin as temporary episodes of forgetfulness, such as an inability to recall specific words or misplacing objects. In some cases, this may progress to failure to remember appointments or events, and eventually dementia.

Dementia can be defined as significant cognitive decline that impairs one’s ability to function in daily life. It includes conditions such as Alzheimer’s disease and vascular dementia.

Pathophysiology

Estrogen has both direct and indirect effects on neuronal function. High concentrations of estrogen receptors exist in the hippocampus and prefrontal cortex, regions of the brain associated with episodic and working memory.

It appears that the hormone influences the activity of neurotransmitters, including serotonin and acetylcholine. Deficits in acetylcholine, especially, play a role in the development of dementia. Meanwhile, serotonin helps mood regulation, which can be adversely affected by cognitive decline.

Estrogen also promotes neuronal growth and the formation of new synapses, displays antioxidant activity, and regulates calcium homeostasis, a mechanism that is implicated in the development of Alzheimer’s disease. The hormone also protects the small blood vessels of the brain to prevent vascular dementia.

Alzheimer’s disease is the most common cause of dementia. Three of the most significant risk factors are advanced age, apolipoprotein-E (APOE)-4 genotype, and female sex.

As women transition through menopause, they undergo a series of neuroendocrine changes. One of these is the uncoupling of estrogen from the brain’s bioenergetic system, leading to a hypometabolic state.

Sometimes described as a “brain bioenergetic crisis,” this state promotes the aggregation of harmful amyloid-beta and tau proteins, causing amyloid plaques and neurofibrillary tangles, the hallmark characteristics of Alzheimer’s disease. Although the precise role of these structures in the disease’s pathology is unclear, they are thought to interfere with nervous transmission within the brain.

Another link between memory and menopause relates to vasomotor symptoms. Hot flashes can cause a temporary spike in cortisol levels, which can reversibly impair verbal memory. These symptoms may be more pronounced in women suffering from stress, anxiety, or depression.

Risk Factors

Body Mass Index

Women between the ages of 40 and 50 years with a high body mass index may be at increased risk of developing dementia. Conversely, those with increased body mass index later in life (over 65 years) appear to have a lower risk.

Metabolic Syndrome

Women with cardiovascular disease, type 2 diabetes, high cholesterol, and high blood pressure are at increased risk of developing dementia.

Physical Activity

Low levels of physical activity are associated with an increased risk of cognitive decline during and following menopause.

Diet

A diet rich in omega-3 fatty acids (especially DHA) and antioxidants (e.g. vitamin E) may offer some protection against cognitive decline.

Smoking

Women who smoke are at increased risk of developing dementia later in life.

TCEAM Viewpoint

Cognitive decline, including mild cognitive impairment, memory loss, and Alzheimer's disease are the result of Kidney, Heart, and Spleen deficiency. Cognitive decline becomes most evident in withdrawal into somnolence, an inability to stay alert during the day, and/or forgetfulness which may or may not be accompanied by agitation.

The Kidney is the sea of marrow and provides the substance of the brain, while the Heart regulates its activity. The Spleen's involvement stems from its function of transforming fluids. When the Spleen becomes deficient, the result is dampness and phlegm. These substances accumulate in the channels, making the sea of marrow turbid and obstructing the orifices that connect the Heart and brain.

Somnolence

Generally, this condition results from clear yang not reaching the head or insufficient yang. The following patterns may be involved:

Pattern Differentiation

1. Dampness encumbering the Spleen
2. Phlegm obstruction
3. Blood stasis
4. Spleen qi (and Blood) deficiency
5. Spleen and Kidney yang deficiency

1. Dampness Encumbering the Spleen			
Dampness interferes with the normal circulation of yang qi, especially to the head where it fails to invigorate the brain and brighten the eyes, resulting in mental dullness, difficulty thinking, and difficulty keeping the eyes open.			
Clinical Manifestations			
Sleepiness, particularly after eating, variable fatigue which is better for movement and exercise, heavy sensations, poor appetite with loss of taste, loose stools.			
Tongue	Pulse	Treatment Principle	Points
Swollen with thick, white greasy coat	Soft and soggy or slippery	Dry dampness, strengthen the Spleen	Fenglong ST-40 Taibai SP-3 Baihui DU-20 Shenmai BL-62 Zhaohai KID-6 Yinlingquan SP-9 Sanyinjiao SP-6 Zhongwan REN-12 Zusanli ST-36 Fengchi GB-20
Prescription			
Ping Wei San			

Table 4.10a: Dampness encumbering the Spleen.

2. Phlegm Obstruction			
Similar to dampness encumbering the Spleen, phlegm obstructs the rise of yang through the same pathological mechanism but can become a more chronic and stubborn condition.			
Clinical Manifestations			
Chronic and continuous somnolence, heavy sleep, difficult to rouse, tendency to obesity, glossy or greasy skin, sensations of heaviness.			
Tongue	Pulse	Treatment Principle	Points
Flabby with a thick greasy coat	Slippery	Transform phlegm, open the channels to the head	Fenglong ST-40 Taibai SP-3 Baihui DU-20 Yinlingquan SP-9 Sanyinjiao SP-6 Tianshu ST-25 Zhongwan REN-12 Pishu BL-20 Zusanli ST-36 Taichong LIV-3 Fengchi GB-20 Zhaohai KID-6 Shenmai BL-62
Prescription			
Di Tan Tang Er Chen Wan			

Table 4.10b: Phlegm obstruction.

3. Blood Stasis			
Blood stasis could arise from head injury or from other chronic conditions such as prolonged qi stagnation failing to move the Blood.			
Clinical Manifestations			
Persistent daytime drowsiness, recurrent fixed headache, other signs of Blood stasis such as broken blood vessels, darkish complexion, purplish lips and nail beds, perhaps mood swings and hair loss.			
Tongue	Pulse	Treatment Principle	Points
<p>In chronic cases, dark or purplish body with brown or purple spots</p> <p>In acute cases tongue may be unremarkable</p>	Choppy or wiry and thready	Invigorate Blood circulation, open channels and collaterals	Local points on head + Xinshu BL-15 Hegu LI-4 Geshu BL-17 Sanyinjiao SP-6 Xuehai SP-10 Fengchi GB-20 Shenmai BL-62 Houxi SI-3 Zhaohai KID-6 Taichong LIV-3 Sishencong M-HN-1
Prescription			
Tong Qiao Huo Xue Tang Xue Fu Zhu Yu Tang			

Table 4.10c: Blood stasis.

4. Spleen Qi (and Blood) Deficiency			
Qi deficiency prevents the brain and senses from receiving sufficient qi.			
Clinical Manifestations			
Daytime drowsiness and desire to sleep (worse for exertion or eating), perhaps Blood deficient insomnia at night, mental and physical fatigue, weakness and tiredness in limbs, loose stools, pale and sallow complexion.			
Tongue	Pulse	Treatment Principle	Points
Pale and swollen with tooth marks and thin white coat	Deficient and weak	Strengthen the Spleen and tonify qi	Baihui DU-20 Sanyinjiao SP-6 Zhongwan REN-12 Shenmai BL-62 Zhaohai KID-6 Fenglong ST-40 Taibai SP-3 Zusanli ST-36 Pishu BL-20 Sishencong M-HN-1
Prescription			
Xiang Sha Liu Jun Zi Tang			

Table 4.10d: Spleen qi (and Blood) deficiency.

5. Spleen and Kidney Yang Deficiency

Yang being the dynamic force of all physiology, its lack will show as an excess of yin with dulled senses and drowsiness. Yang deficiency is more pronounced in the daytime.

Clinical Manifestations

Constant drowsiness and desire to sleep, physical and mental exhaustion, apathy and depression, forgetfulness, reluctance to speak, digestive weakness, low libido, cold intolerance with cold extremities.

Tongue	Pulse	Treatment Principle	Points*
Pale or bluish and swollen with a thin moist coat	Deep, thready and weak	Benefit qi, warm yang, strengthen the Spleen and Kidney	Shenshu BL-23 [^] Pishu BL-20 [^] Mingmen DU-4 [^] Taixi KID-3 Zhishi BL-52 Qihai REN-6 [^] Baihui DU-20 Shenmai BL-62 Zhaohai KID-6 Zusanli ST-36 [^]
Prescription			
Fu Zi Li Zhong Wan Jin Gui Shen Qi Wan			

* Consider adding moxa on some of the points marked with ^

Table 4.10e: Spleen and Kidney yang deficiency.

Forgetfulness

A functioning memory relies upon the balanced interaction of aspects of the Heart, Spleen, and Kidney function. Disordered memory or memory loss could result from Heart Blood and Spleen qi deficiency, the Heart and Kidney not communicating fully, the decline of *jing*, or Blood stasis and phlegm stagnation.

Pattern Differentiation

1. Heart Blood and Spleen qi deficiency
2. Heart and Kidney yin deficiency
3. Kidney *jing* deficiency
4. Blood stasis and phlegm stagnation

1. Heart Blood and Spleen Qi Deficiency			
When Heart Blood is weak, the <i>shen</i> becomes unanchored and unstable. With Spleen qi deficiency the <i>yi</i> will be weak. The symptoms displayed depend on whichever pattern dominates - Heart Blood weakness results in more forgetfulness, Spleen qi deficiency in an inability to concentrate or pay attention.			
Clinical Manifestations			
Forgetfulness, poor memory, absentmindedness, inability to concentrate, insomnia with difficulty falling to sleep, dream disturbed sleep, palpitations with or without anxiety, anxiety, postural dizziness, blurred vision, fatigue and tiredness, poor appetite, pale complexion, easy bruising.			
Tongue	Pulse	Treatment Principle	Points
Pale with thin white coat	Thready and weak	Strengthen and nourish the Heart and the Spleen, tonify qi and Blood, calm the <i>shen</i>	Baihui DU-20 Zhishi BL-52 Shaohai HT-3 Shenmen HT-7 Xinshu BL-15 Geshu BL-17 Pishu BL-20 Yintang M-HN-3 Sanyinjiao SP-6 Zusanli ST-36 Guanyuan REN-4
Prescription			
Gui Pi Tang			

Table 4.10f: Heart Blood and Spleen qi deficiency.

2. Heart and Kidney Yin Deficiency

Heart and Kidney yin deficiency type forgetfulness develops when the mind loses stability as the Kidney yin fails to nourish the Heart yin and balance Heart fire which blazes out of control. As well as being acquired slowly over time it also can be a result of trauma or shock.

Clinical Manifestations

Forgetfulness, insomnia with frequent waking or feeling hot and sweaty, restlessness, palpitations, anxiety, sensation of heat in palms and soles, night sweats, dry mouth and throat, low backache, dizziness and tinnitus.

Tongue	Pulse	Treatment Principle	Points
Red with scant coating	Thready and rapid	Nourish Heart and Kidney yin, clear heat, calm the <i>shen</i>	Neiguan P-6 Daling P-7 Taixi KID-3 Shenmen HT-7 Shaofu HT-8 Zhishi BL-52 Baihui DU-20 Xinshu BL-15 Shenshu BL-23 Jueyinshu BL-14 Taichong LIV-3 Yintang M-HN-3
Prescription			
Tian Wang Bu Xin Dan			

Table 4.10g: Heart and Kidney yin deficiency.

3. Kidney *Jing* Deficiency

Most common in the elderly as the *jing* declines with aging or in those with a history of multiple pregnancies, chronic illness, drug use, and other factors that deplete *jing*.

Clinical Manifestations

Poor memory which may lead to loss of recognition of those who are familiar and short-term memory loss, dulled senses, generalized weakness perhaps with emaciation, graying, falling lifeless hair or balding, weak lower back and lower limbs, poor libido, nocturia and frequent urination, loss of hearing, decreased eyesight.

Tongue	Pulse	Treatment Principle	Points*
Pale with thin white coat	Thready and weak	Nourish and tonify the Kidney, qi and Blood, consolidate <i>jing</i>	Taixi KID-3 [^] Shenshu BL-23 [^] Baihui DU-20 Zhishi BL-52 Guanyuan REN-4 [^] Mingmen DU-4 [^] Shenmen HT-7 Xinshu BL-15 [^] Zhaohai KID-6 Shenmai BL-62 Yongquan KID-1
Prescription			
Ren Shen Yang Rong Tang			

* Consider adding moxa on some of the points marked with ^

Table 4.10h: Kidney *jing* deficiency.

4. Blood Stasis and Phlegm Stagnation

Blood stasis and phlegm stagnation are a complication of chronic disease common in the elderly. Traumatic head injury can also cause a progression to this pattern. Clear yang is impeded in its circulation hence poor mental functioning.

Clinical Manifestations

Forgetfulness, poor memory, absentmindedness, short attention span, inability to concentrate, slow speech, dulled senses, blank expression.

Tongue	Pulse	Treatment Principle	Points
Dark or pale purple with brown or purple stasis spots and greasy white coat; sublingual veins distended and dark	Generally slippery or thready and choppy	Transform phlegm, invigorate Blood and eliminate stagnant Blood	Xinshu BL-15 Shenshu BL-23 Zhishi BL-52 Geshu BL-17 Jianshi P-4 Sanyinjiao SP-6 Hegu LI-4 Baihui DU-20 Sishencong M-HN-1 Fenglong ST-40 Taibai SP-3
Prescription			
Shou Xing Wan			

Table 4.10i: Blood stasis and phlegm stagnation.

Patient Advice

The major modifiable risk factors for cognitive decline and Alzheimer's disease are primarily related to either cardiovascular risk factors (diabetes, hypertension, and obesity) or lifestyle habits (e.g. smoking, physical inactivity, poor diet, and a lack of mental and social stimulation). Therefore advice to patients is to improve modifiable lifestyle factors:

- > Preventing the onset of diabetes mellitus.
- > Not smoking.
- > Managing mood and treating depression.
- > Maintaining mental activity.
 - Mind strengthening exercises: puzzles, crosswords, etc.
 - Promoting neural plasticity: learning an instrument or new language.
- > Engaging in regular physical activity.
- > Consuming a balanced, antioxidant-rich diet and nutritional supplements.

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