

Treatment of Hominis placenta pharmacopuncture for a patient with mild neurocognitive disorder: Case report

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Key Words

Hominis placenta, pharmacopuncture, mild cognitive impairment, mild neurocognitive disorder

Abstract

Hominis placenta pharmacopuncture, a treatment that injects Hominis placenta extract into acupoints, has been suggested in the literature and researches that it could be used for cognitive decline. We experienced a case of mild neurocognitive disorder treated with Hominis placenta pharmacopuncture. Hominis placenta pharmacopuncture could be a possible treatment modality producing substantial clinical result in cognitive function which is assessed with Mini-Mental State Examination-Dementia Screening (MMSE-DS), Korean Version of Montreal Cognitive Assessment (MoCA-K), and Korean-Dementia Rating Scale (K-DRS). A 84-year-old man with mild neurocognitive disorder received Hominis placenta pharmacopuncture on GV20, CV12, and bilateral ST36 for a month. The results of neuropsychological examination showed increase in scores after treatment of Hominis placenta pharmacopuncture. Before treatment, they were 15 points for MoCA-K, and 120 points for K-DRS (7.6%), but after treatment, they elevat-

ed by 21 points for MoCA-K and 137 points for K-DRS (100%). MMSE-DS score was 28 points, unchanged before and after treatment. It did not cause any side-effect. Hominis placenta pharmacopuncture could be a safe option for treating mild neurocognitive disorder.

Introduction

Mild neurocognitive disorder (NCD) is a condition in which cognitive functions are degraded rather than normal memory loss, and cognitive function is not severe compared to dementia, and activities of daily living are preserved. Mild NCD is characterized by memory impairment and learning difficulties and it reduces the ability to concentrate on long-term tasks. Significant mental fatigue appears when attempting mentally demanding tasks, and new learning is subjectively difficult even when it is objectively successful. These signs are not severe enough to be diagnosed with dementia or delirium. Diagnostic and Statistical Manual of Mental Disorders (DSM-5) criteria for mild neurocognitive disorder are as follows; Evidence that cognitive decline in one or more cognitive domains (complex attention, executive function, learning and memory, language, perceptual-motor function or social cognition) is minor compared to previously attained functioning and cognitive decline do not interfere with independent abilities in activities of daily living. Prevalence rate of mild NCD in Korean population was 11.10% (1). Despite its high prevalence, there is no effective drug developed to stop the progression of mild NCD to major

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NCD and there have been reports of cognitive training or cognitive rehabilitation as non-drug treatment.

Hominis placenta pharmacopuncture is a method of injecting Hominis placenta extract into specific acupoints and it is known that synergistic treatment effect can be achieved by combining both effect of Hominis placenta and that of acupuncture. Animal experiments were conducted to evaluate the changes in cognitive function of Alzheimer's disease animal models. Hominis placenta pharmacopuncture improved the cognitive function in behavioral tests and significant changes in brain tissue were observed in both amyloid- β (A β) injection model and transgenic animal model (2,3).

To our best knowledge, there has been no report about clinical effect of Hominis placenta pharmacopuncture on cognitive decline. This report concerns a cognitive improvement in a 84-year-old male patient suffering from mild NCD.

Case report

The study received ethical approval from the Kyung Hee University Korean Medicine Hospital Institutional Review Board (KOMCIRB 2019-04-005).

In 12th December, a 84.2-year-old male patient visited to the Department of Neuropsychiatry at Kyung Hee University Korean Medicine Hospital due to memory impairment. He complained that he had often forgotten where he put things and could not find them and that he had sometimes forgotten what he had planned to do. He got lost twice in recent four years. He did not have distinct psychiatric and behavioral disturbances such as agitation, anxiety, apathy, dysphoria, delusion etc on the first day of treatment. He had 16 years of education and graduated university. He had undergone cataract surgery in 1993 and had no other past history except taking the hypertensive drugs. He suffered from memory loss and numbness since 2014 and was diagnosed with mild cognitive impairment. In the first visit, symptoms were assessed with Mini-Mental State Examination-Dementia Screening (MMSE-DS), Korean Version of Montreal Cognitive Assessment (MoCA-K), and Korean-Dementia Rating Scale (K-DRS). On 12th December, the MMSE-DS score was 28 points and the MoCA-K score was 15 points. K-DRS score was 120 points (7.6% by percentile values according to age and educational years) whose subscale scores were 35 (37.1%) for attention, 21 (2.9%) for initiation/perseveration, 6 (100.0%) for construction, 36 for (80.0%) for conceptualization, and 22 (34.3%) for memory (Table 1).

Hominis placenta pharmacopuncture was administered once a week from December 12, 2018 to January 4, 2019. The treatment consisted of injections of 0.2ml dosage of Hominis placenta extract into each acupoints, which were GV20, CV12, and bilateral ST36.

In the third visit, he was able to recall, remembering all the acupoints where the extract had been injected. At the

end of treatment which included four treatments, he reported reduced fatigue of the whole body and increased motivation. He visited all of the scheduled dates.

MMSE-DS score was 28 points, which was the same at the beginning and at the end. The other measures showed a change. MoCA-K score increased from 15 points to 21 points. K-DRS score was 120 (percentile 7.6%) at the first visit but 137 (100%) on the last visit. In subscales, initiation/perseveration score increased from 21 (2.9%) to 34 (88.6%) and memory score increased from 22 (34.3%) to 25 (100%). Conceptualization score slightly increased from 36 (80.0%) to 37 (94.3%), while attention and construction score remained unchanged at 36 (37.1%) and 6 (100.0%) respectively.

There was no adverse reaction during the skin test before the initial administration and no discomfort or other adverse effect was reported during the treatment period.

Discussion

We have treated a mild NCD patient who complained of memory impairment with Hominis placenta pharmacopuncture. MoCA-K increased from 15 points to 21 points, and K-DRS increased from 120 points to 137 points, confirming improvement in cognitive function. In K-DRS, the memory and initiation/perseveration domains increased greatly. MMSE-DS showed no change at 28 points before and after treatment. Although MMSE is a certified test with simplicity and efficiency, it is considered as unsuitable for early diagnosis of dementia as has a narrow difficulty range and has a ceiling effect, limiting screening for mild cognitive impairment and dementia (4). In mild NCD, unlike MMSE, MoCA shows wider score range and less ceiling effect due to inclusion of frontal/executive subscales (5-7). It seems that it was hard to make a difference in MMSE because he had a high score of almost perfect score at the first visit. MoCA-K and K-DRS, on the other hand, had low scores at first, but the scores were in the normal ranges at the time of the last treatment. Improvement in memory parameter (delayed recall subscale of MoCA-K; memory subscale of K-DRS) and frontal/executive parameter (specific questions from visuospatial/executive, attention, language, abstraction subscale of MoCA-K; specific questions from initiation/perseveration, conceptualization subscale of K-DRS) assessed by both tests were consistent. Since he did not receive other treatments, the improvement of cognition is thought to be due to the effect of Hominis placenta pharmacopuncture.

Hominis placenta is a human placenta that contains immune substances such as interferon, blood coagulation factors and various hormones, their precursors, and cell proliferation factors. 『Compendium of Materia Medica』 (本草綱目) and 『Recovery from All Ailments』 (萬病回春) reported that Hominis placenta can be used in the symptoms of forgetfulness, mania and disorientation, which are symptoms of dementia today. In 『Introduction to

Table 1 Comparison of assessment on cognitive function from the first visit to the final visit.

	First visit	Final visit
MMSE-DS	28	28
Orientation	10	10
Attention	5	5
Memory	5	4
Language	6	6
Visuospatial ability	1	1
Judgement	1	2
MoCA-K	15	21
Visuospatial/Executive	3	3
Naming	1	2
Attention	5	4
Language	0	2
Abstraction	0	1
Delayed recall	0	3
Orientation	6	6
K-DRS	120 (7.6%)	137 (100%)
Attention	35 (37.1%)	35 (37.1%)
Initiation/Perseveration	21 (2.9%)	34 (88.6%)
Construction	6 (100.0%)	6 (100.0%)
Conceptualization	36 (80.0%)	37 (94.3%)
Memory	22 (34.3%)	25 (100.0%)

Medicine』(醫學入門) and 『Treasured Mirror of Eastern Medicine』(東醫寶鑑), Hominis placenta was heated or was made as a pill to treat disorientation and mania. In addition, Hominis placenta was used for prescriptions of Daejohwan (『Complete Works of Jingyue』(景岳全書)) and Cheongeumbomyungdan (『Longevity and Life Preservation』(壽世保元)).

In animal experiments, oral administration of Hominis placenta itself or the prescription whose main ingredient was Hominis placenta increased learning and memory function behavioral tests and BDNF expression (8–10). Randomized controlled trials and case studies on Alzheimer's dementia was conducted using Hominis placenta itself or Hominis placenta-containing prescriptions (e.g. Jihwangikjibang, modified Chilbokeum, Bosinhwad-amikjibang, Bosinikjeongtang, Chibokgang)(11–21).

Injecting 0.1ml/day of Hominis placenta into CV12 for 8 weeks in A β -injected mice resulted in significant memory improvement as shown in stop-through latencies, distance movement-through latencies measurements in Morris water maze. In addition, expressions of proinflammatory cytokines such as IL-1 β and TNF- α were decreased in brain tissue. Lipid peroxidation level and the number of CD68+/CD11b+ cells, markers of microglia, were significantly reduced. Hominis placenta pharmacopuncture significantly inhibited acetylcholinesterase (AChE) activity in serum and decreased expression of tau, preseniline 1/2, Glial fibrillary acidic protein (GFAP) in immunohistochemistry (3). In addition, injecting respectively 20 μ l/day of Hominis placenta into GV20, CV12, bilateral ST36, and bilateral HT7 for 3 weeks in A β -injected mice showed significant increase in time spent on the periphery of the platform in Morris water maze and in spontaneous alternation in Y-maze. In the study that examined the oral and intraperitoneal administration of Hominis placenta (100mg/kg/day, 15 days) in 5XFAD mice, memory function significantly improved in novel object recognition test. Decreased dendrite density in A β plaque area was recovered. Density and length of dendrites increased when cortical neurons damaged by A β 25–35 were treated with Hominis placenta extract (2).

We used GV20, CV12, and bilateral ST36 in this study. Other than the animal studies examining the effect of Hominis placenta pharmacopuncture (3), some studies investigated the effect of acupuncture on GV20, CV12, and ST36. In SAMP8 mice, acupuncture treatment on GV20 showed improved results in Morris water maze test and metabolite analysis using 1H NMR spectroscopy (22). Blood perfusion, glycol metabolism were increased in bilateral limbic system, bilateral temporal lobe, right amygdala, and right hippocampus in PET scan after acupuncture treatment on ST36 (23). GV20 and ST36 were used in the experiment to observe cell proliferation and neuroblast differentiation in hippocampus of rats after acupuncture and electroacupuncture treatment (24). Acupuncture treatment on CV12 and ST36 improved aging-related gene profile expression in rat hippocampus (25) and also showed significant differences in Morris water maze test and a change in dentate gyrus and CA3

(26,27). According to systematic reviews, GV20 and ST36 were the most commonly used points in RCTs which investigated the effect of acupuncture on Alzheimer's disease and CV12 was also used in RCT (28).

Through this case, Hominis placenta pharmacopuncture did not show any adverse effect during the treatment period and can be performed as a safe and effective treatment for cognitive impairment in the future.

Conflict of interest

The authors declare that they have no conflicts of interest.

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