TREATMENT OF DIABETIC RETINOPATHY WITH HERBAL DECOCTION: CASE REPORT

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Introduction

Diabetes is regarded as a major threat to global public health. The estimated number of the global population affected by diabetes was 366 million in 2011, nearly 50% of whom remained undiagnosed\(^1\). \(^2\). In 2013, the number reached 382 million and by 2035, this number has been predicted to reach 592 million if no action is taken\(^3\). This goes on to suggest that around 10 percent of the world population will be affected by diabetes, a good percentage of whom will not even get to know that they have the condition\(^4\). It is the developing world that feels the burden of diabetes the most, with the low and middle income countries contributing nearly 80%. Furthermore, almost two-thirds of all diabetic cases in the developing countries arise from the Asia Pacific regions, mostly India and China respectively\(^5\).\(^6\).

Diabetes has been associated with microvascular and macrovascular complications, further compounding the overall burden on its patients, families and society\(^7\). The secondary complications linked to diabetes such as: coronary heart disease, heart failure, stroke, periodontal disease, neuropathy, nephropathy and retinopathy are frequent, severe and pose serious problems to the economies of developing countries\(^8\).\(^9\). These secondary complications are the reasons behind a significant number of cases of mortality and morbidity arising from diabetes. There is also considerable reduction in mean life expectancy resulting from diabetic complica-
tions (by 19 years in women and 12 years in men). The healthcare resources are heavily taxed as a result of the complications arising from uncontrolled diabetes with diabetic retinopathy perhaps being the complication with the greatest socio-economic impact besides diabetic nephropathy.(5-8)

Nearly one in every three of diabetic subjects progress to diabetic retinopathy and the latter has been implicated as the leading contributor of blindness and vision loss in the working-age adult population.(9-11) It has been established that diabetic retinopathy which develops in the early stage of diabetes, can lead to blindness in the later stages of the disease.(12) This therefore creates serious burden for the individual with diabetic retinopathy in terms of dependence, greater needs for social support, potential loss of earning capacity, and others.

Large randomized controlled trials as well as preliminary observational studies have suggested a direct relationship between the incidence of diabetic retinopathy and the level of glycated hemoglobin (HbA1c)(13, 14). Both the progression and incidence of diabetic retinopathy have been shown to be controlled with effective glycemic control(15). Although a number of other strategies have been suggested in recent times in the management/treatment of this metabolic disorder, their unwanted side effects have limited their adoption. For instance, diabetic retinopathy patients treated with synthetic diabetic medications have been shown to develop cardiovascular diseases leading to increased research for herbal alternatives.(16)

From ancient times, Chinese traditional medicines have been used in the treatment/management of diabetes(17). Chinese herbal decoction has been used extensively in Asia for glycemic control(18). Except for a few studies on animals(19, 20), there are limited reports on the applicability of Chinese herbal decoction in the treatment of diabetic retinopathy.

This therefore led to this study which reports a case of treatment of diabetic retinopathy in human (s) with herbal decoction of Chinese recipes that were produced based on “tonifying after dredging stasis” theory from “Shenshiyaohan”.

This study was conducted at the affiliated Hospital to Changchun University of Chinese Medicine, Changchun, China. The local ethics committee of Changchun University of Chinese Medicine, approved the study and informed consent was obtained from the subject (s). Only patient (s) with no history of other diseases or on medications for other disease conditions that were used for this study

Case presentation

The patient, 52 year old male (BMI: 30 kg/m2), with a four year history of diabetes, was hospitalized in October, 2010. He had blurred vision. Examination showed that the right eye was 0.3 while that of the left eye was 0.2 and none of the eyes showed congestion, with transparent cornea, normal depth of anterior chamber, clear aqueous and no turbid crystal in the pupils. Further examination showed clear border of optic disc, clear vessel caliber and micro aneurysms, small blood spots, hard exudation and gray-white cotton-wool patches on retina as well as diffused reflection of central light. Visual field examination using Humphrey automatic Perimeter Center SITA30-2 program showed light sensitivity in the central visual field with mean defect (MD): right -4.1, left -4.5. Laboratory test showed fasting plasma glucose (FPG): 12.9 mmol/L and sugar in urine (+++). Physical examination showed shortness of breath, dry throat, dark complexion, purple tongue, thin white fur and weak pulse. The diagnosis confirmed it to be a case of stage II diabetic retinopathy. In terms of Traditional Chinese Medicine (TCM) syndrome differentiation, his condition was considered the syndrome of deficiency and exhaustion of liver (Yin) and the syndrome of deficiency and exhaustion of kidney (qi). The treatment principle was to nourish kidney and liver, cool blood and stop bleeding. The combination of “Tonifying after Dredging Stasis” theory and modifying herbs were applied.

First treatment

The first session of treatment involved application of Codonopsis 10 g, Schisandra 6 g, Ophiopogon japonicus 10 g, Shengdi 10 g, peach kernel, safflower 10 g, licorice root each 5g, Citrus aurantium 10 g, angelica 10 g, red peony root 10g, Radix bupleuri 10 g, Achyranthes 10 g, Chuanxiong 6 g, Platycodon grandiflorum 6g, 7 agent decocts with water, one agent per day.

Second treatment

The patient still complained of fatigue, shortness of breath, lazy words, dry throat, dark complexion and appeared gloomy. The above mentioned herb recipe was continued, 7 agent decocts with water, one agent per day.

Third treatment

Visual examination: visual acuity right 0.4-
1.00DS=0.8, left 0.4-1.25DS=0.8. No obvious abnormalities before visual examination: visual acuity right 0.4-1.00DS=0.8, left 0.4-1.25DS=0.8. No obvious abnormalities before the festival but for scattered microaneurysms in the retina, hemorrhage and exudation partly absorbed with foveal reflex dispersion. No fluorescence fundus angiography and visual field examination. The patient was still observed to be fatigued with shortness of breath, mitigated lazy words, better dry throat, ruddy complexion, red tongue, thin white fur, weak pulse. The blood stasis syndrome was found to have been cured. The modification of “BuYangHuanwu” Soup was now used which included the following: astragalus root 50 g, safflower 10 g, peach seed 10 g, earthworm 10 g, Chuanxiong 10 g, angelica 10 g, tripterygium glycosides (TPG) 10 g, fourteen agent decocts with water, one agent per day.

Fourth treatment

Visual examination indicated the following: right 0.6-1.00 DS=1.0, left 0.6-1.25 DS=1.0. Fluorescence fundus angiography: omental punctate hemorrhage with strong fluorescence, hemorrhage was found to be arrested with no perfusion area. Visual field examination: light sensitivity in the central visual field MD: right -2.0, left -1.9. The patient felt an improvement in eyesight twenty days later and re-examination showed that his right eye has turned 0.60 and left eye 0.40. No obvious abnormalities before the festival, clear optic disc border, normal color; the bold spots in the fundus were basically absorbed; the exudation was absorbed to some degree; the micro aneurysms became less than before; and the central light reflection turned sharp. The whole body symptoms disappeared, except for pale tongue, thin white fur and weak pulse. The patient was discharged from the hospital after a 27-day treatment regime and a 3-month follow-up showed no relapse.

Discussion

Traditional Chinese Medicine, especially Chinese herbs, plays important roles in the treatment of diabetes and attendant complications. Traditionally, diabetes mellitus was named as “xiao-ke” or “wasting and thirsting”, and in modern terms it is known as “sugar urine disease”. It is believed that the etiology is related to excess food intake and emotional disturbances. Thirst, hunger, and excessive urination are three of the primary major symptoms of diabetes. In Huang Di Nei Jing, it was described that “diabetes mellitus originates from deficiency of yin and is manifested externally as a syndrome of excessive heat”.

For the patient in this case report, the syndromes of deficiency and exhaustion of the liver and kidney were the basic diagnosis for diabetic retinopathy, with accompanying blood stasis symptom. Therefore, the major treatment principle should focus on relieving the exhaustion and/or the deficiency of the liver and kidney, as well as invigorating blood at the same time. Furthermore, “tonifying after dredging stasis” theory from “Shenshiyaohan” emphasizes on replenishment of the liver and kidney along with blood invigoration to fight the pathogenic factors and strengthen the body resistance at the same time.

Previous studies also reported that combined herbal decoctions such as stragalus, rehmannia, atractylodes, Tribulus terrestris, chrysanthemum, Haliotis diversicolor, and Platyodon grandiflorum were helpful in the treatment of diabetic retinopathy with reasonable success: about 80% treated eyes showed improvement with reduced plasma viscosity and blood sugar level. Therefore, findings from this study further support the use of decoctions of Chinese herbs in the treatment of diabetic retinopathy.

In conclusion, herbal decoction has been proven to be an effective and safe method to prevent and treat the vascular complications of diabetes such as diabetic retinopathy. Finally, the effective dose of these herbal decoctions needs to be documented.

References


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