

## Zhiqiaochuanxiong decoction for major depressive disorder complicated by functional dyspepsia: a case report with fast-acting efficacy

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### Abstract

**OBJECTIVE:** To introduce a clinical case from Professor Huang Xi from Xiangya Hospital in traditional Chinese medical (TCM) treatment for a major depressive disorder (MDD) complicated by functional dyspepsia (FD).

**METHODS:** A 26-year old unemployed male migrant worker (Han nationality) presented himself at the TCM outpatient department of our hospital on May 13th 2013, with the chief complaint of persis-

tent low mood and negative emotions lasting 2.5 years. He was diagnosed as having MDD complicated by FD. The TCM differentiation made was "Gan-qi-Yujie" (Liver-Qi stagnation). Zhiqiaochuanxiong (ZQCX) decoction, composed of Zhiqiao (*Fructus Aurantii Submaturus*) 40 g and Chuanxiong (*Rhizoma Chuanxiong*) 40 g, was given to be taken twice daily. The patient's condition was evaluated with a 128-channel electroencephalogram (EEG) and high-resolution manometry (HRM). During follow-up the patient was monitored with the Patient Health Questionnaire and Leeds Dyspepsia Questionnaire.

**RESULTS:** After treatment, the symptoms of depression and the FD comorbidity disappeared. Furthermore, the main EEG and HRM were significantly improved after 1-7 weeks of ZQCX decoction administration.

**CONCLUSION:** ZQCX decoction showed rapid prokinetic and anti-depressive effects in a MDD patient complicated by FD. Most commonly used antidepressants target only the brain, whereas ZQCX decoction targets the brain-gut axis according to TCM theory.

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**Key words:** Depressive disorder, major; Dyspepsia; Electroencephalography; Manometry; Zhiqiaochuanxiong decoction

### INTRODUCTION

Depression is a common cause of suicide and disability.

Depression has complicated comorbidities, especially functional gastrointestinal disorders (FGIDs).<sup>1,2</sup> Prospective studies have found a close relationship between depression and functional dyspepsia (FD).<sup>3</sup> However, popular antidepressants, like selective serotonin reuptake inhibitors (SSRIs), usually need several weeks to take effect and have side-effects such as anorexia, nausea, and vomiting, often leading to discontinuation of the treatment. Patients must tolerate the adverse side effects while undergoing a long therapeutic course with a low response rate and delayed efficacy.<sup>1,4-6</sup>

The TCM pattern "Ganqi-Yujie" (GY) manifests as disordered mood and digestion, and has similar comorbidities as depression and FD.<sup>5,7</sup> The TCM anti-GY prescription Chaihushugan San (CSS) exhibits prokinetic and anti-depression, and has a long history of clinical use.<sup>8-11</sup> According to our clinical experience, the dosages Zhiqiao (*Fructus Aurantii Submaturus*) and Chuanxiong (*Rhizoma Chuanxiong*) in the CSS prescription should be increased for depression patients accompanied with FD symptoms.<sup>5,7,12-14</sup> Here, one illustrative case of satisfactory therapeutic efficacy is reported.

## CASE PRESENTATION

An unemployed male migrant worker, aged 26, presented himself at the TCM outpatient department of our hospital on May 13th, 2013 with the chief complaint of persistent low mood and negative emotions. Two and half years before, he had begun to feel depressed because of unemployment and suffered from a lost appetite. The patient then experienced epigastric fullness, and belching for 15 months. He received CT scans (Siemens, CT-Definition AS, Germany) of the head and abdomen with no abnormal findings, and was diagnosed as having major depressive disorder complicated by FD in a local hospital. He had taken an antidepressant fluoxetine for 6 months. His mood was not improved, but the digestive discomfort increased following a long course of treatment. Therefore, the patient stopped taking the medicine for 5 months before coming to our hospital to receive TCM treatment.

## METHODS

In our department, routine electroencephalogram (EEG) examination and Patient Health Questionnaire (PHQ-9) were used to evaluate the patients' condition of depression, while high-resolution manometry (HRM) and the Leeds Dyspepsia Questionnaire (LDQ) were used to assess the FD symptoms. Informed consent was obtained from the patient. EEG was performed using the NeuroScan's SynAmps amplifier system (NeuroScan Inc, Herndon, VA, USA), which was connected to a 128-channel EEG cap. The specific channels used are shown in Figure 1. Gastrointestinal motility was detected by the HRM system (Manoscan, Sierra Scientific Instruments, Los Angeles, CA, USA).

On May 14th, we checked his EEG, and found that the electrical activity in his temporal lobe showed a significant left-right asymmetry (T3-T4). There were excessive  $\beta$  waves in the T3 region and a few scattered low-medium volatility  $\theta$  waves (Figure 1A, 1B). His PHQ-9 score was 20 for major depressive disorder, and his LDQ score was 14 for functional dyspepsia (Figure 2). His HRM showed a low lower esophageal sphincter pressure (LESP, -6.0 mm Hg compared with normal 4.8-32.0 mm Hg) (Figure 3A).

ZQCX decoction was composed of Zhiqiao (*Fructus Aurantii Submaturus*), 40 g and Chuanxiong (*Rhizoma Chuanxiong*), 40 g. The crude herbs (80 g) were decocted with 1.2 L water and concentrated to 400 mL. ZQCX decoction was taken orally twice daily, 200 mL each time. The entire treatment course lasted 8 weeks. Quality control of ZQCX extracts is briefly described in Figure 4 and Table 1.

## RESULTS

One week after ZQCX treatment, the patient felt some improvements in mood and appetite with reduced frequency of early satiety and epigastric fullness. His EEG showed a reduction in T3-T4 asymmetry with reduced  $\beta$  waves in the T3 region (Figure 1C). The patient's PHQ-9 score was 12.0; LESP was 4.3 mmHg; and LDQ was 9.0 (Figure 2, 3B).

Three weeks after ZQCX treatment, the patient felt significant improvements in mood with a willingness to take part in conversation with others. His appetite was almost regular, and the symptoms of early satiety, epigastric fullness, and belching were much less frequent. His EEG showed disappearance of T3-T4 asymmetry and with no excessive  $\beta$  waves (Figure 1D). The patient's PHQ-9 score was 10.0; LESP was 11.8 mm Hg; and LDQ was 6.0 (Figure 2, 3C).

Seven weeks after treatment, the patient was very satisfied with the treatment results. He said that his mood was much more stable, and that he was more eager to look for jobs. His FD symptoms were almost completely gone. His PHQ-9 score was 7.0 and LDQ was 2.0. The therapeutic efficacy was fast and satisfactory (Figure 2). During the 6-month follow-up until December 18th, the results of the treatment satisfied the patient.

## DISCUSSION

Major depressive disorder (MDD) is a refractory disease with unclear pathogenic mechanisms. It is a major cause of suicide and disability.<sup>1,6</sup> MDD with FGID comorbidities is as high as 93%.<sup>2</sup> However, current antidepressants that fit into the "one-compound-one-target" paradigm are not effective at treating depression's comorbidities.<sup>1,6,15</sup> Fluoxetine targets only the brain to treat depression; when depression is complicated by functional dyspepsia, the drug's long administration

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