

Case Report

Retrospective Case Series: TCM Therapy Improves Autism/ADHD-Like Behavior in Food Allergic Children

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Abstract

Allergens can produce sensory, neurological, and behavioral changes, especially in children diagnosed with autism and/or ADHD. Certain Traditional Chinese Medicines may reduce allergic sensitivity/inflammation and alleviate autism/ADHD like behavioral symptoms. This is a retrospective case series on two patients with allergies, gastrointestinal issues and Autism/Autism-like who had improved behaviors and allergies after a Traditional Chinese Medicine (TCM) regimen. Two patients with autism-ADHD/autism-ADHD-like behaviors and severe allergies were treated using TCM to reduce their allergies and improve their behavior. These effects were achieved when the correct concentrations and doses of a series of TCM teas and treatments were reached. TCM appeared to be safe and well tolerated. TCM significantly improved the behaviors and allergies of both patients, therefore TCM may be a potential remedy for sensory issues, neurological problems and behavioral changes associated with allergies.

Keywords: Traditional chinese medicine; Autism/ADHD-like behavior; Allergy

Introduction

Atopic diseases are often present in children diagnosed with autism-ADHD at higher rates than healthy controls [1]. Allergic conditions such as asthma, rhinitis and eczema are frequently associated with sleep disturbance in addition to complaints of respiratory difficulty and pruritus. Gastrointestinal discomfort is a common feature of food allergy. These allergic symptoms and underlying inflammation are thought to aggravate autism behavior in patients supporting a link between inflammation and autism [2]. Recent evidence shows that elimination diets are useful in alleviating autism behavior in at least a subset of patients. Studies have reported higher levels of pro-inflammatory cytokines such as IL-6 and TNF-alpha in serum of autism patients and neurological consequences of gut inflammation *via* a gut-brain axis are now being appreciated [3]. Parents of children displaying co-morbid allergy and autism are more likely to seek alternative and complementary therapy as they encounter higher levels of anxiety and dissatisfaction with standard therapy. We present here a series of two pediatric patients who presented with comorbid food allergy and autism-ADHD/autism-ADHD-like behavior. Parents of both children sought TCM therapy for alleviation of food allergy at a TCM clinic. After a period of therapy with anti-allergy TCM herbal formulas specifically tailored for each child, not only were allergic symptoms reduced but parents also reported noticeable and significant improvement in autistic behavior and reduction in use of autism medication. We surmise that reduction of neurological symptoms in the two patients may in part be due to TCM anti-inflammatory effect and modulate skin-gut-brain axis, requiring further studies. Although there is currently no cure for autism, TCM could aid in improving the behavioral symptoms.

Case Presentation

Case 1

Patient 1 is an 8-year-old male patient diagnosed with food allergies, asthma, chronic constipation, autism with ADHD, Crohn's Disease, Eosinophilic Esophagitis, and Ollier's Disease. He had suffered acute pancreatitis at age 1 and a bowel obstruction at age 2. He had three food reactions, 2 of them due to peanut exposure and one due to cashew exposure. He had been on avoidance of peanut and cashew. He also avoided dairy because it caused stomach pain and worsened constipation. His daily ADHD/autism medications included leucovorin, memantine, and atomoxetine. He took polyethylene glycol as needed for regularity and as needed for allergies. His asthma medications included levalbuterol, fluticasone and prednisone. He was also taking dietary supplements, including omega 3 fatty acids, Coenzyme Q10, a probiotic, and magnesium citrate for his constipation. Additionally, prior to TCM clinic visit, the patient had been on a bowel cleanse protocol followed by probiotics. After clinical evaluation, a TCM regimen was prescribed for treatment of food allergies, asthma, and chronic constipation. The regimen included Remedy A and Remedy B taken orally as pills and external Herbal Cream to be applied on the skin. After 3 months of TCM therapy, Patient 1 was no longer constipated, and his appetite improved significantly. Surprisingly, at 6-7 months of therapy, the patient's mother reported mood improvements, reduced congestion and more regular bowel movements. His speech had substantially improved and he began attending to his bathroom needs independently for the first time. At 1 year of TCM therapy his eosinophilic esophagitis was significantly improved and his constipation was solely controlled by three teaspoons of magnesium. He continued to be in charge of his bathroom habits, gained more muscle mass and appeared to be in

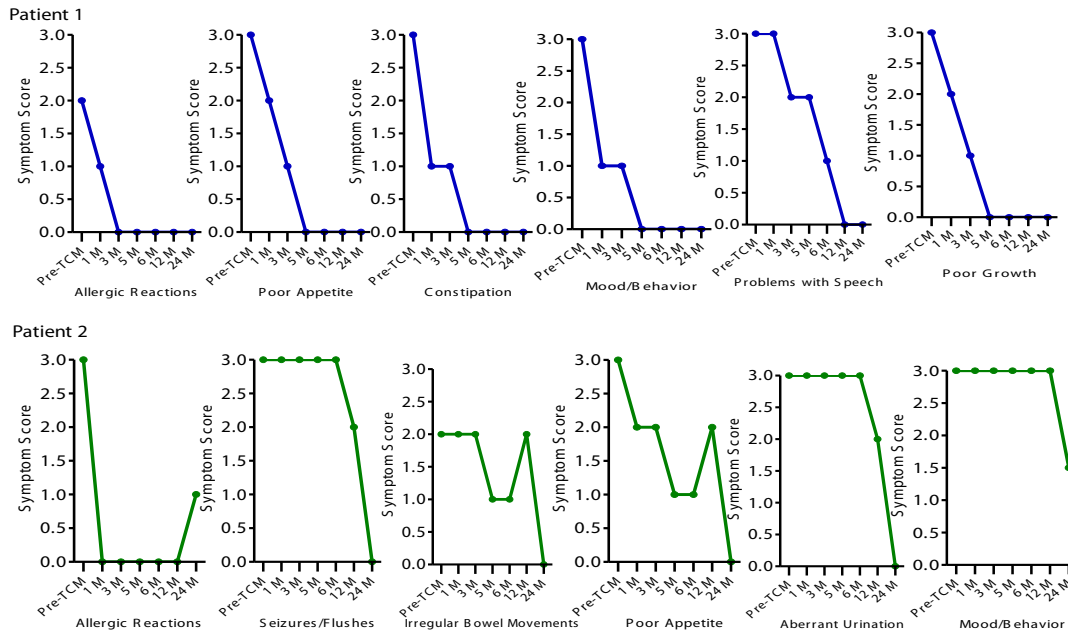


Figure 1: Symptom scores before and during TCM therapy. Although these patients started treatment at different times, the pattern in decrease is similar to both cases. Over an extended period of TCM anti-inflammatory treatment, ASD and allergy symptoms can improve. Severity of symptoms is defined as 3 = severe, 2 = moderate, 1 = mild, 0 = absent. No bar represents a severity score of zero.

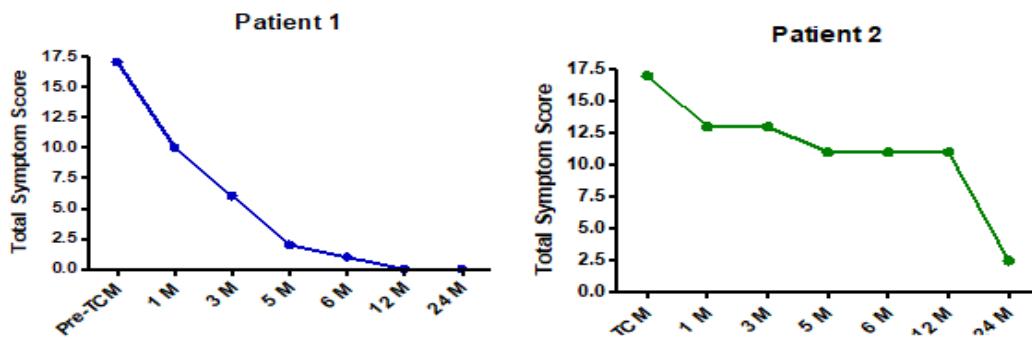


Figure 2: Total symptom scores before and after TCM.

better general health. The patient’s mood had improved significantly, energy levels were reported as good and he no longer complained of irritable bowel symptoms. At this time the dosage of magnesium was decreased from 3 teaspoons to 1.5 teaspoons a day. He was able to discontinue atomoxetine, a medication he had been taking for four years. After two years of treatment, his focus, decision making, thought engagement and ability to follow routines were all improved. His total symptom score changed from 17 at baseline to 0 at twelve months of treatment. The improvement of behaviors during TCM therapy is summarized in Figure 1 and 2 (P1). His total IgE was not high and remained low during the TCM (Figure 3, P1). His specific IgE against peanut, walnut, cashew, and hazel nut were above normal arrange (1-2 levels, Figure 4, P1) and also remained low during the TCM. Patient 1 reintroduced peanuts and dairy products into his diet with no reported reactions.

Case 2

Patient 2 is an 11-year-old male diagnosed with autism, peanut

and other tree-nut allergies as well as eczema as an infant. His medical history included a stroke at birth resulting in right sided spastic hemiplegic cerebral palsy and other neurologic issues affecting his oral motor skills. He experienced very violent seizures and had the tendency for aberrant urination. He displayed violent behavior at school and home. Patient 2 was taking medications including Levetiracetam, Lacosamide, and Oxcarbazepine and Guanfacine (used to treat epileptic drug), amitriptyline (drug use to treat depression), guanfacine (use to treat ADHD), and fluoride (for his dental hygiene). He also took fexofenadine daily for allergy symptom relief. After clinical evaluation, Patient 2 began treatment with a TCM regimen for peanut /tree nut allergies and eczema. The initial regimen included Remedy A taken orally, and TCM Remedy B, Bath Additive Herbal in the bath, and C. Cream applied on the skin. After 3 months of TCM therapy, the patient’s eczema and bowel movements had improved and his behavior had slightly improved as well. At five months he began the use of Remedy C and Remedy D. At six months, it was noted Patient 2 had not had any allergic reactions since the

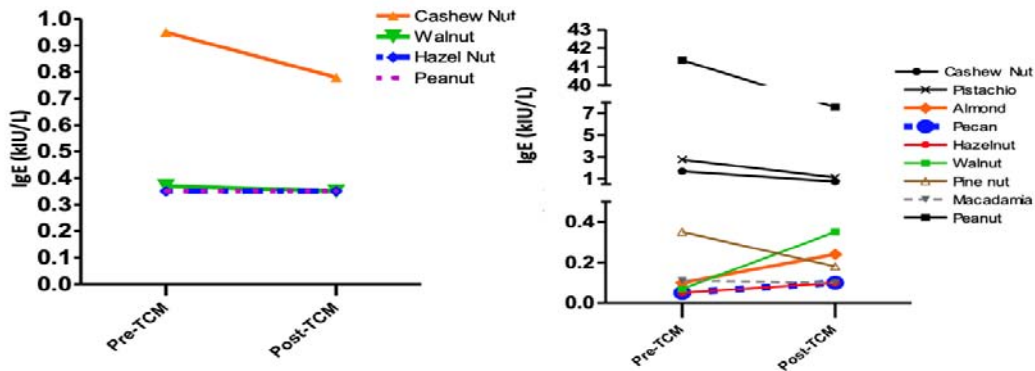


Figure 3: Specific peanut/tree-nut IgE levels in P1 and P2 before and after TCM treatment. Final levels of allergenicity for P1 were calculated a year and a half after initial treatment in April 2014. Final levels of allergenicity for P2 were calculated two years after initial treatment.

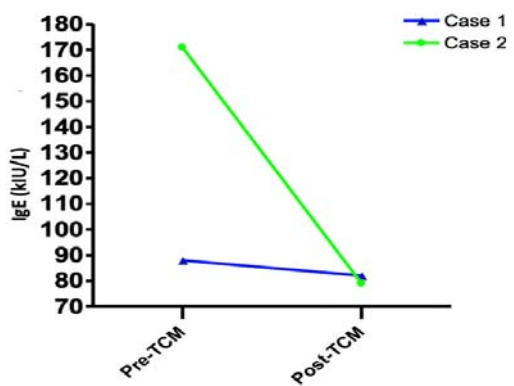


Figure 4: Total IgE levels in Patient 1 and Patient 2 before and after TCM treatment.

start of TCM therapy. His behavior had improved and urination was better controlled. By 3-4 months his neurologist reduced the doses and stopped Lacosamide, Oxcarbazepine and added Clobazam. By one year of TCM he also stopped Guanfacine, Levetiracetam, amitriptyline, guanfacine as recommended by his neurologist. After one year of TCM therapy the patient’s behavior had drastically improved. His eczema also improved and IgE levels were reduced. In particular, his peanut IgE dropped from 41.3kU/L to 12.8kU/L, decrease of 69% over 1 year and no allergic reactions were reported in this time. After two years of TCM therapy the patient had not experienced any seizures, his tree nut IgE levels were within normal range and no reactions had been reported. Total IgE had decreased

from 171 at baseline to 79 and peanut-specific IgE decreased by 41% over the past year. Improvements in behavior had been maintained.

Discussion

Two patients with autism-ADHD/autism-ADHD-like behavior and severe allergies used TCM to reduce their allergies and improve their behavior. These effects were achieved when the correct concentrations and doses of a series of TCM treatments were reached. Although both cases resulted in significant differences in behavioral and neurological symptoms, there were differences in how the TCM improved their symptoms. While P1s symptoms and bowel problems improved immediately following treatment, P2s symptoms improved more graduation and in combination with effects of medication. The progression of P2s symptoms, and the drastic change in behavior, allergic reactions, and IgE levels demonstrate that careful consideration is needed. As a retrospective study, there is potential recall bias in collecting information from the medical record/chart and the parents. There is also the possibility of selection bias due to patients seeking out certain TCM treatments for their allergies. However, based on the results of the two case studies, we conclude that certain components of TCM are able to reduce allergies/sensitivities by significantly decreasing the magnitude of inflammation in humans. Awareness about the role of inflammation in autism is now fairly established. Levels of innate pro-inflammatory cytokines such as IL-6, IL-1β and TNF-alpha have been reported to be higher in autism patient serum and cell response compared to healthy controls in multiple studies. 2 An important cellular source of these cytokines is the mast cell which plays a prominent role in allergic reactions, gastrointestinal-

Table 1: Laboratory Safety Data before and after TCM.

Laboratory Value	Pre-TCM Case 1	Post-TCM Case 1	Pre-TCM Case 2	Post-TCM Case 2	Normal References Range (kIU/L)
WBC (K/uL)	6.7	6.9	6.5	5.1	c1: 4.3-12.4 c2: 4.5-13.5
Hemoglobin (g/dL)	13.6	13.6	13.6	12.6	c1: 10.9-14.8 c2: 11.5-15.5
Platelets (K/uL)	262	272	313	294	c1: 190-459 c2: 150-400
Urea (mg/dL)	19	14	12	10	c1: 5-18 c2: 7-17
Creatinine (mg/dL)	0.5	0.5	0.48	0.58	c1: 0.37-0.62 c2: 0.72-1.25
AST (U/L)	29	30	28	25	c1: 0-60 c2: 14-40
ALT (U/L)	16	19	20	12	c1: 0-29 c2: 0-55

and brain inflammation. Presence of mast cells in the CNS and their ability to communicate with microglial cells, glial cells and neurons make it an important cellular target in neuro-inflammation. Several TCM and other Asian herbal therapies have been shown to possess anti-inflammatory properties and some of these have been reported to possess mast cell inhibitory function such as FAHF-2 and TJ-54 [4]. In a small human study, TJ54 treatment was able to improve severe irritability, and hyperactivity in adolescents [5]. In light of finding of the current study and others, it would be highly advisable for physicians to be aware of allergy symptoms in their autism-ADHD patients, and to address them adequately. Aggravation of autism symptoms by inflammation from allergic diseases should be considered in atopic individuals. A multidisciplinary approach would be beneficial when treating this group of children presenting with systemic manifestations of inflammation. TCM therapy may be valuable strategy to treat allergies and gastrointestinal problems as a means to aid improvement of behavioral symptoms.

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