

Diabetes Type II & Gestational (2019)

Overview

Key points

- Given the limitations of current pharmacotherapy, acupuncture may be a valuable additional treatment option to help manage the complications of type 2 diabetes [1-2]
- There is a lack of large, well-designed studies on the effects of acupuncture or acupressure for the management of type 2 diabetes and its complications [3]
- The small studies conducted to date suggest that acupuncture may help improve insulin resistance and reduce blood glucose levels in patients with type 2 diabetes [4-6]
- Acupuncture appears to help improve the signs and symptoms of peripheral neuropathy associated with type 2 diabetes, including reducing levels of pain and improving quality of life [7-9]
- Promising data show that acupressure may be helpful in women with gestational diabetes, reducing insulin resistance and anxiety levels [10,11].

Background

Type 2 diabetes mellitus (T2DM) is a growing global healthcare problem² associated with serious complications such as retinopathy, nephropathy, neuropathy, and atherosclerosis which increase mortality and reduce quality of life. [7] T2DM is also responsible for a significant economic burden due to escalating treatment costs. [2,12]

Obesity is a key risk factor for T2DM as it reduces the body's sensitivity to the insulin produced in response to food eaten. [6,13]

The standard approach to tackling obesity is weight loss through an altered diet and increased physical exercise, but the effects are limited in some people with T2DM.[6] If lifestyle changes aren't successful in managing blood glucose levels then medication is introduced, starting with metformin with further drugs added if control is not achieved.[14] Almost half of all people with T2DM have problems with adherence to their diabetes medication regimen, which results in poor blood glucose control and an increased risk of complications and mortality.[1] This in turn increases hospital admissions and associated healthcare costs.[1]

Acupuncture is a low cost, non-pharmaceutical intervention commonly used to manage diabetes in modern China,[11] usually in combination with diabetic medication.[6]

The effectiveness of acupuncture treatment

A systematic review of studies investigating the treatment of T2DM with Chinese medicine found that although the evidence for acupuncture is generally considered low quality, it may have certain advantages when compared with conventional Western medicine. Larger, well-designed trials are required to establish the benefit of using acupuncture in the management of T2DM.[3]

Insulin resistance is central to T2DM. A review of human and animal studies in 2016 failed to find any qualifying human acupuncture studies where the insulin resistance was associated with diabetes. Overall, including the more numerous animal studies, the data suggested that electroacupuncture at low intensity and low frequency can reduce insulin resistance and increase insulin sensitivity, but the results are stronger for obesity and polycystic ovarian syndrome than for T2DM. More high quality studies are needed, especially randomised clinical trials with human participants.[12]

Recent individual randomised controlled trials (RCTs) have reported that:

- Self-acupressure increased insulin and decreased fasting blood glucose compared to the no treatment control group.[2]
- Acupuncture at a single point was superior to sham acupuncture for improving blood glucose levels. [4]
- Acupuncture was associated with greater improvement in systolic blood pressure, waist circumference, blood glucose, lipid profile and insulin resistance than diabetic medication in obese patients with diabetes. [5]
- Also in obese or overweight people, electroacupuncture together with metformin was better than sham electroacupuncture plus metformin for body weight, body mass index, fasting blood sugar, fasting insulin, and insulin resistance. The researchers also found significant effects on a variety of inflammatory markers and on biochemicals involved in lipid metabolism. [6]
- In a small, crossover study, real acupuncture significantly reduced gastric retention compared with sham and improved gastroparesis symptoms without changes in blood glucose levels. [16]
- Acupuncture has also been found effective in metabolic syndrome (considered a precursor to T2DM). Compared to sham acupuncture it was associated with better outcomes for waist size, weight, total cholesterol and blood pressure, though not for fasting blood glucose.[17]

Diabetic neuropathy

Almost a third of all people with T2DM develop peripheral neuropathy (DPN) which is associated with an increased risk of foot ulcers and amputation.[18]

There are two recent systematic reviews, one of any non-pharmacological treatment for DPN and one of acupuncture for any sort of peripheral neuropathy. The former found only one eligible acupuncture RCT, which was too little evidence for making a recommendation.[19] The latter included four RCTs for DPN, all from China and all with medication control groups.[9] Acupuncture was superior for neuropathic symptoms, nerve conduction characteristics and overall improvement scales, but the authors noted that there were multiple methodological flaws across the studies.

A number of RCTs have been published subsequent to these reviews. Most notable is a Korean multi-centre comparison of electroacupuncture against no electroacupuncture, with 126 participants: this brings the methodological rigour absent from most previous studies.[8] Those in the treatment group had significantly lower pain intensity scores compared with the control group, as well as greater improvements in sleep interference and quality of life scores. Electroacupuncture was considered well-tolerated, with no more adverse events than in the control, and those reported during the study were not considered related to the acupuncture treatment.

A similar sized, randomised trial of acupuncture versus no treatment was reported from China, but here the acupuncture was combined with hydrotherapy and relaxation exercises.[7] The focus was on elderly diabetic people with lower extremity arterial disease, as well as peripheral neuropathy. The combined treatment did not result in any significant effects on blood glucose levels but was associated with measurable benefits in disease-specific physical symptoms, functioning and capabilities and in health-related quality of life. Again, there were no significant adverse events.

Gestational diabetes

Gestational diabetes mellitus (GDM) is characterised by glucose intolerance and is associated with serious complications such as macrosomia (high birth weight), birth injury, neonatal hypoglycemia and anxiety.[10,20]

A small study of the effect of acupressure on women with GDM compared with standard care found that acupressure reduced levels of insulin resistance and the amount of insulin required for treatment. No significant differences in pregnancy and neonatal outcomes at labour were apparent between groups.[10]

Pregnant women with GDM report higher anxiety and stress levels compared with non-pregnant women and healthy pregnant women. [11,21,22] Acupressure in women with GDM has been shown to significantly reduce anxiety levels compared with a control group.[11]

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