

## •Case report•

# Panic attacks 10 years after heart transplantation successfully treated with low-dose citalopram: a case report

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**Summary:** Panic attacks are common among patients who have undergone heart transplantation, but there are no clinical guidelines for the treatment of panic attacks in this group of patients. This report describes a 22-year-old woman who experienced panic attacks 10 years after heart transplant surgery. The attacks started after she discovered that the average post-transplantation survival is 10 years. Treated with citalopram 10 mg/d, her symptoms improved significantly after 2 weeks and had completely resolved after 8 weeks. A positive physician-patient relationship with the doctors who regularly followed her medical condition was crucial to encouraging her to adhere to the treatment with citalopram. She continued taking the citalopram for 7 months without any adverse effects. When followed up 3 months after stopping the citalopram, she had had no recurrence of the panic attacks.

**Keywords:** heart transplantation; panic attacks; citalopram; China

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## 1. Introduction

Anxiety and depression are common among recipients of heart transplant surgery.<sup>[1-4]</sup> The prevalence of panic attacks is about 8% in these patients.<sup>[4]</sup> We present the case of a young female who experienced panic attacks 10 years after heart transplantation that were successfully treated with low-dose citalopram.

## 2. Case history

A 22-year-old woman who had undergone heart transplant surgery in October 2005 when she was 12 years old had been in excellent health during the first nine years of follow-up, but she started having panic attacks in November 2014. One night she suddenly experienced tightness in her chest, palpitations, shortness of breath, and profuse sweating with no obvious triggers. She was immediately taken to the emergency department where an extensive clinical exam and laboratory tests found no abnormalities: her liver and kidney function, electrolytes, cardiac enzymes, and D-dimers were all normal; and an electrocardiogram (ECG) showed a heart rate of 110 beats per minute, left atrial enlargement, atrioventricular nodal reentrant tachycardia, and T-wave changes (normal findings after heart transplant surgery). She was given oxygen by mask for half an hour and discharged after the symptoms resolved. During the next week she experienced

repeated panic attacks every two days, most of which occurred prior to bedtime, and all of which resulted in emergency room visits where no abnormalities were identified and the symptoms resolved after 30 minutes of oxygen by mask. Following the suggestion of the emergency room physicians, she bought a home oxygen generator so she could take oxygen at bedtime, but the panic attacks and emergency room visits continued to occur every two days.

A few weeks later in early December 2014, she came to the heart transplant surgery unit for a routine outpatient follow-up visit. Her heart ultrasound test revealed an ejection fraction of 67% (normal range is  $\geq 55\%$ ); her brain natriuretic peptide (BNP) was 137  $\mu\text{g}/\text{ml}$  (a measure of heart failure that is normally below 1000  $\mu\text{g}/\text{ml}$  in persons who have undergone heart transplantation); the blood levels of anti-rejection drugs were within the reference ranges; and routine blood tests and liver and kidney function tests were all within normal limits. Thus, there was no clear physical cause for the panic attacks.

Further inquiry into the history revealed the probable trigger for the panic attacks. After her transplant she had been a diligent student and eventually graduated from college. Starting a couple of months earlier (in August 2014) she began working as a financial officer at a small firm where no one

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knew of her medical condition. Then in October 2014 by happenstance she learned that the average life expectancy of heart transplant recipients is about 10 years beyond the surgery. Given that she had just completed 10 years post-surgery follow-up, this information was a major shock for her. She became very anxious, and before long the panic attacks began to occur.

Given the normal physical findings in the presence of relatively severe panic attacks, her doctor at the transplant surgery unit recommended immediate assessment at the hospital's department of medical psychology. She was diagnosed with panic disorder by an attending psychiatrist (using criteria of the 5<sup>th</sup> edition of the Diagnostic and Statistical Manual of the American Psychiatric Association, DSM-5<sup>[5]</sup>) and completed Chinese versions of the Hamilton Anxiety Scale (HAMA)<sup>[6]</sup> and the Hamilton Rating Scale for Depression (HAMD)<sup>[6]</sup> which indicated moderate anxiety and mild depression (scores of 23 on HAMA and 13 on HAMD). She refused any form of psychotherapy, but after encouragement from her doctor at the transplantation clinic and family members, she agreed to take medication supervised by psychiatrists at the hospital's psychology clinic. She was started on citalopram 5 mg/d; after one week this was increased to 10 mg/d. After two weeks on citalopram she reported no adverse reactions and indicated that the episodes of panic were less frequent and less severe. She occasionally experienced tightness of the chest and palpitations, but these symptoms would abate after administering oxygen for 10 minutes in her home and did not require emergency room visits. A follow-up assessment with HAMA and HAMD after taking citalopram for two weeks showed that the scores had dropped to 15 and 10, respectively, indicating continuing mild anxiety and mild depression.

She expressed concerns about the safety of long-term use of citalopram and was unwilling to continue going to the psychological clinic because she did not believe she had any psychological problems. Nevertheless, with encouragement and reassurance from the doctors at the transplantation clinic who had followed her heart condition for many years, she continued to take the citalopram at 10 mg/d as supervised by clinicians at the hospital's psychological clinic. After 8 weeks of treatment she reported a complete disappearance of symptoms and did not report any side effects. She was able to attend work every day and performed well on the job, but she still used oxygen at home every night to prevent panic attacks. Her HAMA score had decreased to 9 and her HAMD score had decreased to 7, both within the normal range.

After 12 weeks of treatment she reported feeling normal and asked to discontinue the citalopram, but with the encouragement of her doctors she continued to take the citalopram for another 4 months (that is, for a total of more than 7 months). When followed up 3 months after stopping the citalopram, she had had no recurrence of the panic symptoms and was functioning well at her job.

### 3. Discussion

Panic attacks are relatively common among recipients of heart transplant surgery, but there are no guidelines or literature that discusses steps for handling panic attacks in this unique patient population. One report on depression after heart transplantation<sup>[7]</sup> found that 92% of transplant recipients with a diagnosis of clinical depression received pharmacological treatment (primarily selective serotonin re-uptake inhibitors [SSRIs]), but the study did not compare the efficacy of different types of medications and did not recommend any particular medication. One article published 10 years ago suggested that citalopram and mirtazapine may be better than other antidepressants for treating depression in heart transplant recipients,<sup>[8]</sup> but the authors acknowledged the lack of well-designed studies that could confirm this recommendation. A review by Rustad and colleagues<sup>[9]</sup> found that SSRIs are usually safe and effective for individuals with chronic heart failure who have concurrent depression. Another study reported no adverse reactions when using citalopram among elderly persons with comorbid depression and chronic heart failure.<sup>[10]</sup> Taken together, these studies suggest that citalopram may have an advantage as a treatment for depression among individuals who are heart transplant recipients.

In China citalopram is not approved for use in panic attacks, but there is a growing international literature confirming its effectiveness in the treatment of panic attacks<sup>[11,12]</sup> and several European countries have already approved panic attacks as one of the indications for citalopram. In the absence of evidence-based clinical guidelines for treating panic attacks among individuals who have had cardiac transplantations, the effectiveness and safety of citalopram among elderly patients with cardiac failure makes it one of the best treatment options for patients with cardiac transplantations.

In this case an initial dosage of citalopram of 5 mg/d was increased to 10 mg/d in the second week and subsequently sustained at that dosage. This was sufficient to result in an excellent clinical outcome within 8 weeks without the emergence of adverse effects. There are no recommendations about the dosage and duration of treatment of panic episodes in patients with cardiac transplantation, so we decided to follow general clinical guidelines in China for treating anxiety disorders which recommend that patients stay on maintenance medication for one to two years.<sup>[13]</sup> However, the patient was reluctant to continue taking medication so the treatment only continued for 7 months.

Psychotherapeutic interventions may also be useful. One study found that cognitive behavioral therapy might be effective for depression after heart transplantation.<sup>[7]</sup> In the case report presented in this paper, it is probable that psychological triggers induced the panic attacks. However, the young woman denied that she had psychological problems and adamantly refused psychotherapy. The medical doctors who regularly followed the status of her heart transplantation provided the empathetic psychological support and health education about her panic attacks that ensured

her adherence to the treatment with citalopram. The existence of this strong, trusting relationship with her medical doctors was an essential factor in the successful treatment of her panic attacks.

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#### Conflict of interest statement

The authors declare no conflict of interest related to this manuscript.

#### Informed consent

The patient signed an informed consent form and agreed to the publication of this case report.

#### Authors' contribution

CY and YZ wrote the initial draft of this case report, HC provided insights about the patient's history, JJ provided important comments on the draft, and all authors approved the final manuscript.

## 小剂量西酞普兰成功治疗心脏移植术后 10 年惊恐发作 1 例

叶尘宇, 庄亚敏, 季建林, 陈昊

**概述:** 在接受心脏移植的患者中, 惊恐发作是很常见的, 但对于这些患者的惊恐发作, 没有专门的临床治疗指南。本文报告了一例 22 岁女性在心脏移植术后 10 年发生惊恐发作。患者得知心脏移植后平均存活时间是 10 年之后, 出现了惊恐发作。予以西酞普兰 10mg/d 治疗, 2 周后症状明显好转, 8 周后症状完全消失。定期随访、医患关系良好对鼓励患者坚持西酞

普兰治疗至关重要。患者持续服用西酞普兰 7 个月, 无明显不良反应。在停用西酞普兰 3 个月后随访时, 惊恐发作未复发。

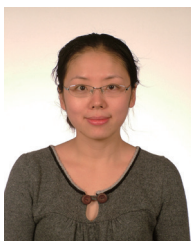
**关键词:** 心脏移植; 惊恐发作; 西酞普兰; 中国

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