

# Disappearance of Ventricular Ectopics following 15-day Practice of Pal's Pranayama Schedule

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## Abstract

A 56-year-old male presented to the Cardiology Outpatient Department with symptoms of left-sided chest pain and sensation of dropped beats for the last 5 days. The chest pain was diffuse and not associated with radiation to left arm or sweating. Fifteen days of practice of Pal's *pranayama* schedule resulted in disappearance of chest discomfort and abolition of ventricular ectopics.

**Keywords:** Pal's *pranayama*, sympathovagal balance, vagal tone, ventricular ectopics

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## INTRODUCTION

Ventricular ectopics are not common in clinical practice. Usually, ventricular ectopics occurs either due to excessive secretion of catecholamines or due to over-stimulation of sympathetic nerve to heart due to stress. However, if this condition is associated with significant ventricular tachycardia, could pose threat to the cardiac health of the person.

## CASE REPORT

A 56-year-old male presented to the Cardiology Outpatient Department, Jawaharlal Institute of Postgraduate Medical Education and Research, Puducherry, India, with complaints of left-sided chest pain associated with sensation of irregular heartbeat for the last 5 days. The chest pain was diffuse and not accompanied by radiation to left arm or sweating. The patient informed the cardiologist that he had a similar problem 3 years before, which after 24-h Holter monitoring was diagnosed to be the case of ventricular tachycardia with ectopics. Although the patient was advised to take medicines, he did not take medicine but practiced 1-month course of yoga therapy that mainly consisted of *Chandra nadi pranayama* (slow left nostril breathing). With *pranayama* practice, the cardiac rhythm was normalized and the patient became symptomless. However, again, the symptoms have appeared after 30 months, which the patient says is mainly due to severe work stress in the

office. The patient also said that this time, the symptoms did not significantly subside with practice of the same schedule of *pranayama*.

The cardiologist, after a thorough clinical examination, recorded 12-lead electrocardiogram (ECG), which revealed ventricular ectopics that are mainly originating from right ventricles and occasionally from left ventricles [Figure 1]. Although radial pulse was 86/min and irregular, the amplitude of pulse was adequate and the blood pressure was normal (120/78 mmHg). The patient is not a known case of diabetic and hypertensive. However, the cardiologist was concerned due to positioning/placing of the ventricular ectopics in the ECG tracing, having ectopics more than 10/min, and the problem being associated with significant chest pain and discomfort. The cardiologist advised the patient to immediately start the beta-blocker (propranolol, 10 mg tablets, four times daily) and advised him to be admitted for 24-h Holter monitoring and further cardiac checkup.

However, the patient requested the cardiologist not to insist on medication and hospitalization as he is planning to have

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some alteration in the *pranayama* practice and report back to him after 1 week. The patient, who is also a medical physiologist and practitioner of yoga, attempted with a change in the module of yoga (*pranayama*). This time, he added *Anulom-Vilom* (alternate nostril breathing) or *Nadisodhana pranayama* to *Chandra nadi pranayama* as the combined practice of *pranayama*, not practicing separately as a session for one followed by the session for the other. Further, in the new module, the duration of exhalation (counting 1–10 in mind, with each count approximately 1 ms) was prolonged to double the duration of inhalation (counting 1–5 in mind, with each count approximately 1 ms). Thus, *Chandra nadi* and *Anulom-Vilom* were practiced together alternatively as slow and deep breathing exercise. The procedure was that the patient sitting in *Nasagra Mudra* gently closes the right nostril by the thumb and inhales deeply in the left nostril while counting 1–5 in mind and then slowly exhales in the same nostril counting 1–10 in mind, and then he repeats the same. Then, he inhales deeply in the left nostril and closes the left nostril by the index finger and exhales slowly in the right nostril and then inhales deeply in right nostril and closes the right nostril by thumb and then exhales slowly in the left nostril. This completes one *pranayama* cycle that takes about 60 s, in which 30 s was utilized for two rounds of the left nostril breathing (*Chandra nadi*), followed by 30 s of one round of alternate nostril breathing (*Anulom-Vilom*). This was practiced ½ h in the morning between 5.30 and 6.30 am and ½ h in the evening between 5.30 and 6.30 pm. After 15 days practice of this *pranayama* schedule, the patient's chest pain subsided and the sensation of abnormal beats disappeared. The recording of ECG was repeated and there were no abnormalities in the ECG [Figure 2].

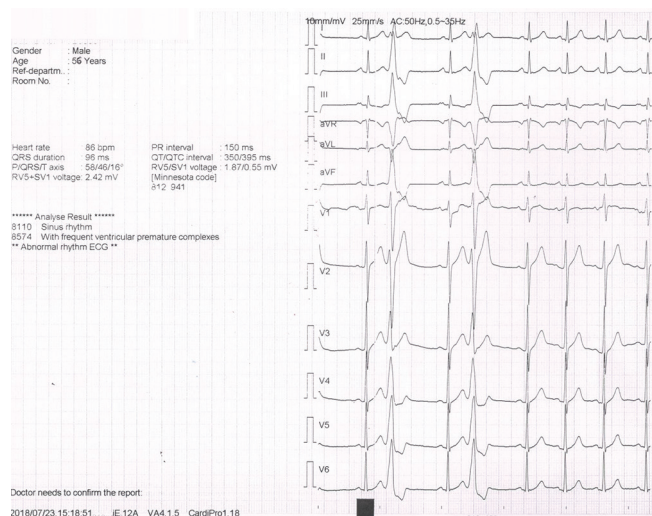
## DISCUSSION

The patient revealed that he had a series of stress in the first half of the year 2018 that included loss of two senior members

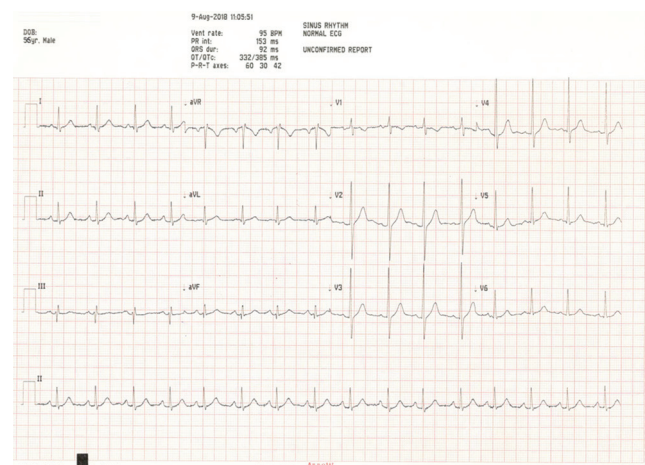
of his family whom he liked so much in his life, acute stress in the office due to problems not being shortlisted for the interview for the top post of the institute in spite of having adequate qualifications and experience, and severe work stress due to difficulty in the management of a new academic campus headed by him having lot of deficiencies. He said that in spite of all these problems, he was able to manage as he regularly practices yoga. Although he had a similar problem 30 months due to stress of job, he had overcome that by practice of yoga that mainly had the schedule of slow *pranayama*. However, this time the stress became intense, which he could not manage by usual yoga practice and started having the cardiac problems.

The 15-day practice of Pal's *pranayama* schedule as described above could ameliorate the problems. The three special features and probable mechanisms of this *pranayama* schedule are as follows:

1. *Chandra nadi pranayama* (left nostril breathing), which is known to potentiate vagal drive, was combined with *Anulom-Vilom* (alternate nostril breathing) that brings sympathovagal balance.<sup>[1]</sup> The time spent in both the types of breathings was equal. Thus, practicing this *pranayama* ensured vagal potency while maintaining autonomic balance
2. The breathings were slow in nature, having four breathings in a minute. Normally, in adults, the rate of breathing is about 16 per min, which was reduced to one-fourth (4 per min) in this *pranayama* schedule. As slow-breathing exercises are known to facilitate vagal drive,<sup>[2]</sup> it is expected that vagal drive was improved in this case
3. The duration of expiration was double the duration of inspiration. In normal breathing, inspiration is more (70%) and expiration is less (30%). In *pranayama* practice as a therapy for various health problems, usually, the duration of exhalation and inhalation is made equal, with six breathings per min. In the present schedule, the inhalation was half the duration of exhalation, with four breathings per min. Thus, breathings were deep and slow with significantly prolonged expiration. It is known that respiration is mainly



**Figure 1:** Note the ventricular ectopics in the ECG tracings as abnormal bigger amplitude QRS complexes appearing irregularly, before yoga practice



**Figure 2:** Note the normal tracing of ECG and no ventricular ectopics, after the pranayama schedule

a parasympathetic (vagal) phenomenon, with increase in vagal activity during expiration and decreased vagal activity (with or without increased sympathetic activity) in inspiration. Physiologically, this phenomenon is called sinus arrhythmia.<sup>[3]</sup> In *pranayama* (controlled or yogic breathings), vagal tone is increased and sympathetic tone is decreased due to increased duration of expiration and decreased duration of inspiration.<sup>[4]</sup> Further, in deep and slow breathings, the afferent discharge from chest wall and lungs entrain the vagal activity. Further, vagus nerve stimulation has been reported to be useful in the treatment of various cardiac ailments.<sup>[5]</sup>

Normally, ventricular ectopics occurs usually due to ventricular ischemia or excess adrenaline secretion due to increased sympathetic drive as occurs in conditions of acute stress. In this case, ventricular ectopics could have been due the stress-induced sympathetic overactivity, which was controlled by *pranayama* practice that might have decreased cardiac sympathetic drive, increased vagal modulation of heart, and maintained sympathovagal balance.<sup>[6,7]</sup> Although the ectopics had disappeared following 15-day practice of Pal's *pranayama*, the heart rate was not reduced. Therefore, it appears that the impact of *pranayama* was more on reduction in sympathetic drive and attainment of sympathovagal balance. Furthermore, the vagal tone following this *pranayama* practice might have been more, although there was no reduction in heart rate, which could have been due to persistence of some degree of internal stress.

## CONCLUSION

Fifteen days of practice of Pal's *pranayama* schedule can prevent the occurrence of ventricular ectopics.

## Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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## Conflicts of interest

There are no conflicts of interest.

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