



Short communication

A tale of two patients: Levodopa and creative awakening in parkinson's disease – A qualitative report

Jacob Chacko^a, Sanju George^{b,*}, Sheetal Cyriac^c, Baby Chakrapani^{d,e}^a Consultant neurologist, Rajagiri Hospital, Aluva, Kerala^b Professor of psychiatry and psychology, Rajagiri College of Social Sciences, Kalamassery, Kochi, Kerala, India^c Rajagiri College of Social Sciences, Kalamassery, Kochi, Kerala, India^d Centre for Neuroscience, Department of Biotechnology, Cochin University of Science and Technology (CUSAT)^e Inter University Centre for Nanomaterials and Devices (IUCND), Cochin University of Science and Technology (CUSAT)

A B S T R A C T

Artistic creativity can emerge in patients with Parkinson's disease. Here we describe two patients who had creative awakening while on levodopa treatment for Parkinson's disease and discuss its implications.

1. Introduction

Idiopathic Parkinson's disease, first described by James Parkinson in 1817 is a chronic progressive neurodegenerative disorder characterized by neurological deficits such as tremor, muscular rigidity, bradykinesia and postural abnormality (Pearce, 1989; Hughes et al., 1992). In addition to the motor symptoms, more often than not, PD also has a range of non-motor manifestations- most often psychiatric symptoms such as perceptual problems, hallucinations, cognitive deficits, and mood changes (Krishnan et al., 2011; Chaudhuri et al., 2006). Pharmacological treatments are the main stay for symptom alleviation and levodopa, dopa agonists, anticholinergics, amantadine and selegiline are useful but levodopa is the most widely used and the most effective (Miyasaki et al., 2002).

Inzelberg (2013) described several patients with PD in whom artistic creativity emerged while on treatment with levodopa and dopamine agonists. Such artistic creativity can take the form of painting, drawing, sculpting, writing, poetry and so on. Lhomme et al (Lhomme et al., 2014) through a case control study demonstrated that creativity could be induced by dopaminergic treatments in PD, and that it disappeared after withdrawal of dopamine agonists.

Levodopa - induced creative output in Parkinson's disease has not yet been reported from India (Surathi et al., 2016). In this brief report, we describe two patients who both had creative awakening while on levodopa treatment for Parkinson's disease - one patient had no prior creative abilities and the other, had a latent creative skill in his childhood. We present excerpts from our qualitative interview with these two patients. Clinicians who see patients with Parkinson's disease

should be aware of this phenomenon.

2. Case 1

Mr A is a 68-year-old man from Kerala, India. He works as a shop keeper and lives with his family. He had no artistic inclination until last year. He developed Parkinsonian symptoms in 2010. Initially he had tremor and slowness, which were treated with trihexyphenidyl 2 mg three times daily, rasagiline 0.5 mg once daily and pramipexole 0.5 milligram three times daily. In 2017, when seen in our neurology clinic his UPDRS motor score: was 45 (moderately disabled). He was started on levodopa (125 mg three times daily) and other medications were continued at the same dose. He showed significant improvement in his motor score. Six months into starting treatment with levodopa, he started creating handicraft items with coconut shell (see pictures). He started spending more and more time in this artistic pursuit and currently he runs it as a small business from home. He makes 5 to 10 items per day with no specific diurnal fluctuation of the creative urge. Items include paper weights, pen holders, book stands and lamp shades. His mental state examination revealed no psychopathology and he was cognitively intact. He does not have any comorbid psychiatric disorder. His new-found creative pursuit has not come into the way of his personal life.

Given below is his account of how he sees his new found creativity:
Q – 'Tell us what you think about your new – found creativity.'

A – 'I am really happy. I don't know what else to say. This might sound strange as I have Parkinson's disease but I am genuinely happy. What God took away from me with one hand, he has given me back

* Corresponding author.

E-mail address: sanjugeorge531@gmail.com (S. George).<https://doi.org/10.1016/j.ajp.2019.06.002>

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with the other. I don't know how it started or why I started doing it. I was not an artistic kind of person before all this. Then suddenly one day while sitting at home, I noticed many coconut shells in my backyard and thought, why don't I try making something out of the coconut shells? I started working with a small knife on it. Later I borrowed some tools from my friends and made various items. It was 6 months ago I think. After that idea occurred to me I didn't waste much time, I got started. I got a few dried coconut shells and started working on them as though I was an artist. It just happened, I just had these ideas. With whatever kitchen tools I had, I made various shapes and various products like handicraft items such as paper weights, pen holders, cups, miniature house boats and so on. Then I varnished them. I didn't think too much about it, I just continued to make these products. Then one day when my friend came home, he was surprised to see me do this. He was the one who suggested that I try to sell them. With the help of family and friends, I now sell these to several local shops. Although not a full-fledged business it helps me considerably with my finances. More than that, it keeps me busy and content. I don't have time to sit and be gloomy. I just think how fortunate I am. I don't know how this happened and neither am I complaining. I just don't want anything to change. I just want to be known as that local artist and not as a patient with Parkinson's disease.'

3. Case 2

Mr. R is a 63-year-old farmer from Kerala, India. He had pursued drawing as a hobby in childhood but not since. He was diagnosed to have Parkinson's disease in 2011. He was initially treated with Pramipexole 0.5 mg three times daily and Rasagiline 0.5 mg once daily. Since the past 4 years, he is on levodopa. He is now on levodopa 125 mg four times daily. Few months into starting levodopa, his creativity was awakened and he started drawing, painting and sculpting. He paints 2 to 3 pictures on most days (see pictures) with no specific diurnal fluctuation of the creative urge. He says he enjoys doing it and there is no compulsion to do this. In no way does this come in the way of his personal life, and he manages to balance his various life duties fairly well, alongside his new found creativity. Interestingly enough, he sells his art and donates all proceeds to the poor who need help with health care. His mental state examination revealed no psychopathology and he had no cognitive deficits. Mr. R does not have any comorbid psychiatric disorder.

Given below is his account of how he sees his new found creativity:
Q – 'Tell us what you think about your new – found creativity.'

A – 'This is my job now. I draw or paint all the time. I just can't stop. I've been doing it for nearly 3 years now. I used to draw a bit as a child, no more than any other child I suppose but never took it up as a hobby or a passion. It was only now that it started again. I was feeling very down with my Parkinson's when my doctor told me – 'think of what you can do not what you can't do'. It just occurred to me one day. I saw my grandchild colouring and I wanted to give it a try, that's how this started. I haven't stopped since. It's like when I draw or paint I am in a different world, I forget everything. I don't think about my illness, instead I just want to paint. My brain works perfectly and it takes my hands and fingers where it wants to. My mind flies into places I haven't known. I don't feel it's pre-planned. It just happens and it makes me immensely happy. When I draw or paint, I feel useful, I feel normal. Initially I wasn't very convinced about whether others will like my creations. But then people offered to buy them. Even then I thought they were doing it out of sympathy. It's only when people who didn't know that I had PD started to offer good money for my paintings that I became confident in my work.'

Now it is a major source of income for me. What gives me greater happiness is that I use the money I generate to support other people who need financial assistance for their medical needs. I feel it's given me a purpose in life. If Parkinson's disease was the only way I could have done all this, I won't complain, honestly. I am doing this for others

and for me. It's really a blessing. Hope I can continue for a long time.'

4. Discussion

Here we have described two cases of creativity in PD – one patient was art-naïve to begin with and the other had some artistic skills in childhood. "Creativity" can be defined as the ability to generate ideas that are both novel and useful or influential in a particular social setting (Chakravarty, 2010; Flaherty, 2005). Creativity, in this context, has to be differentiated from hobbyism. Sternberg (1999) stated that for a production to qualify as creative, it must be both new (and original) and useful (or valuable or relevant). However hobbyism or excessive hobbyism seen in Parkinson's disease, involves specific activities such as fishing, driving or walkabouts (Giovannoni et al., 2000; Fasano et al., 2011).

Creative awakening in patients with PD has been reported before, albeit not extensively. The genre of such art has been variable and has included pictures, sculptures, novels, and poetry. Several, non-mutually exclusive mechanisms have been proposed to explain in PD: creativity expresses sublimation; creativity is a result of hyperactivity and behavioural disinhibition; development of artistic activities is a consequence of enhancing premorbid personality; or creativity is a result of stimulation by dopamine agonists; or creativity might be the emergence of innate skills in some predisposed Parkinson's patients on dopaminergic therapy (Canesi et al., 2012).

Our case series isn't an attempt to explore or explain the theoretical basis for creative awakening in PD but instead we wish to focus on its benefits to patients. The two patients we have described above, as is clear from their subjective accounts, felt that such creative output made them feel good and thus enhanced their sense of well-being. They felt more productive and useful, and it also gave them a sense of purpose in life. All in all, it would seem reasonable to assume that it helped them cope positively with PD and its deficits. From a clinical perspective, this is a helpful outlet for patients' self-expression, leading to better mood state, enhanced self-esteem and better QOL. Such artistic expression is therapeutic, it's a form of art therapy and we call for this usefulness to be further explored in routine clinical practice. Clinicians who see patients with Parkinson's disease ought to be aware of this phenomenon so it can be understood and explored for patient benefit.

5. Financial disclosure

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References

- Pearce, J.M., 1989. Aspects of the history of Parkinson's disease. *J Neurol Neurosurg Psychiatry*. (Suppl), 6–10.
- Hughes, A.J., Daniel, S.E., Kilford, L., Lees, A.J., 1992. Accuracy of clinical diagnosis of idiopathic Parkinson's disease. A clinico-pathological study of 100 cases. *J Neurol Neurosurg Psychiatry* 55, 181–184.
- Krishnan, S., Sarma, G., Sarma, S., Kishore, A., 2011. Do non - motor symptoms in Parkinson's disease differ from normal aging? *Mov. Disord.* 26, 2110–2113.
- Chaudhuri, K.R., Martinez-Martin, P., Schapira, A.H., Stocchi, F., Sethi, K., Odin, P., et al., 2006. International multicenter pilot study of the first comprehensive self-completed non - motor symptoms questionnaire for Parkinson's disease: the NMSQuest study. *Mov. Disord.* 21, 916–923.
- Miyasaki, J.M., Martin, W., Suchowersky, O., Weiner, W.J., Lang, A.E., 2002. Practice parameter: initiation of treatment for Parkinson's disease: an evidence-based review: report of the quality standards subcommittee of the American Academy of Neurology. *Neurology* 58, 11–17.
- Inzelberg, R., 2013. The awakening of artistic creativity and parkinson's disease. *Behavioral Neuroscience* 2013 (2), 256–261 127.
- Lhomme, E., Batir, A., Quesada, J.-L., et al., 2014. Dopamine and the biology of creativity: lessons from PD. *Front. Neurol.* 5, 55.

- Surathi, P., Jhunjhunwala, K., Yadav, R., Pal, P.K., 2016. Research in parkinson's disease in India: a review. *Ann. Indian Acad. Neurol.* 2016 (January–March (1)), 9–20 19.
- Chakravarty, A., 2010. The creative brain-revisiting concepts. *Med. Hypotheses* 74, 606–612.
- Flaherty, A.W., 2005. Frontotemporal and dopaminergic control of idea generation and creative drive. [Research Support, N. I. H., Extramural Research Support, Non-U.S. Gov't Review]. *J. Comp. Neurol.* 493, 147–153.
- Sternberg, R.J., 1999. *Handbook of Creativity*. Cambridge University Press, Cambridge.
- Giovannoni, G., O'Sullivan, J.D., Turner, K., Manson, A.J., Lees, A.J., 2000. Hedonistic homeostatic dysregulation in patients with Parkinson's disease on dopamine replacement therapies. *J Neurol Neurosurg Psychiatry.* 68 (4), 423–428.
- Fasano, A., Ricciardi, L., Pettorruso, M., Bentivoglio, A.R., 2011. Management of punding in Parkinson's disease: an open-label prospective study. *J. Neurol.* 258 (4), 656–660.
- Canesi, M., Rusconi, M.L., Isaias, I.U., Pezzoli, G., 2012. Artistic productivity and creative thinking in PD. *Eu J Neurol* 19 (3), 468–472.