Study of Olfaction Using "UPSIT Olfactory Smell Test" In Early Parkinson's Disease with Acute Schizophenia and Its Co-Relation with MRI Changes in The Arcuate Fasciculus-A Case Series

Venkatesh Kumar MD, Arun Prasath MD DM, Tarun Kumar Dutta MD

Department of Internal Medicine, Jawaharlal Institute of Post Graduate Medical Education and Research

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ABSTRACT

A note on Reverberation phenomenon-The etymology of the 1st Cranial nerve (hereafter referred to as CN) has been kept under study for 60-90000 years. There are CN1-12 and while tractology of these are complete, the olfactory nerve or the primitive nervosa of the human brain is an "odour" elusive. The 8th and 9th CN have no connections and similarly the 2nd to 9th order of the primitive nervosa stay transcendental in the following facts,1)Smell is read synaptically by the olfactory cells of the cribriform plate which are transmitted to the olfactory cilia and glomerular and preglomerular cells.2)Medial perforated substance or the anterior mamillary body is the kempt provis of odour(5th order tractology) which is based on the member sexology while certain populous have absent 13th CN(the spinal accessory nerve).3)The Pada nerve here referred to as novel,or the frontal bracket or cloud of movement sensor is an obfuscated nerve bundle which favours connection to uncinate and arcuate fasciculus thereby connecting to lingual area or area 13 of temporal lobe by simulate volcare from the OLFACTORY BULB or the 6th order and is expansile-contractile in nature. There are 3 to 5 scenarios in 18-60year old population where 'mmsec-SI unit' (6) expansion and contraction of the olfavtory bulb (E and C of OB) may be symmetric or asymmetric, the latter causing auditory hallucinations in this case series showing hyperluscency of the arcuate fasciculus. The arcuate fasciculus is studied by Functional MRI to be a eight nerve bundle, neurons in which synapse at premeditated combinations in relation to E and C of OB. Similarly, the uncinate fasciculus is studied to be a four-nerve bundle related to 13 the CN in head movements.

In this case series of 5-10 Parkinsonism diagnosed with resting trmors, bradykinesia and cog wheel rigidity with co-morbid Acute Schizophrenia, we had a chance to highlight the MRI changes of Arcuate Fasciculus in relation to OB-E and C. Patient was on also on Syndopa-Carbidopa Rx, an additional factor which may have incited the Auditory hallucinations.

A subset of 5-6 head injury and 15-22 URTI patients were also included for co-relation with hyposmia by "UPSIT olfactory smell test" in this study.

Keywords: Margination or Reverberation or Hubbernation reflex, auditory hallucination-Aud. Hall., AF-arcuate fasciculus, pleximeter, OB-olfactory bulb, hyposmia, olfactory memory

Background

Parkinson's disease (PD) is the second common neurodegenerative disorder with high prevalence in the west and also in India.Our patient subset was 56-74year olds who presented with the cardinal features. of PD according to Braak staging (1) and were diagnosed based on common features of resting/intention tremors, bradykinesia, cog wheel rigidity, *scanning speech and festinant gait.* **Interestingly *this case series also had symptoms of auditory hallucination as they were chosen subset with Acute Schozophrenia, URTUI or recuperated head injury patients.TO PROVE organicity pf this Auditory hallucination WAS THE AIM AND OBJECTIVE OF THIS PILOT STUDY.***

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METHODOLOGY

Cases were subjected to the following objective test *called "UPSIT olfactory smell test" with four preordained odours namely Cardomom, Menthol, Garlic and camphor using 'Sniffing sticks'* and later MRI 128 slice with T2 diffusion weighted imaging the next day.

1.Four different odours in five incremental concentrations were administered to be inhaled.

2.Parameters of olfactory threshold evaluation, smell identification and discrimination were studied.

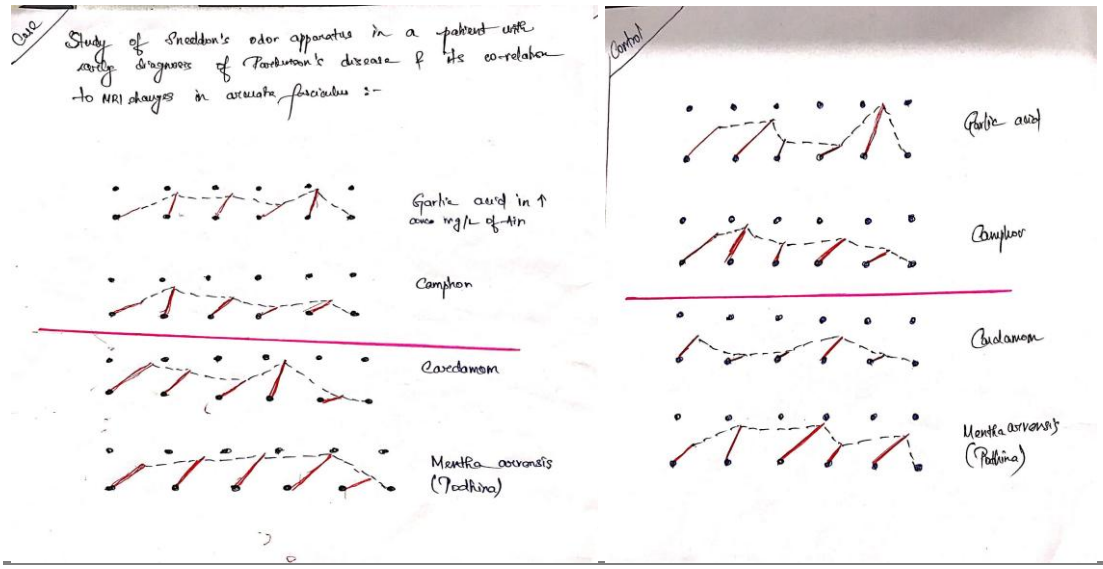
3.Olfactory memory was studied in the extent of dorsiflexion of the pleximeter finger (right/left specifically after 3rd higher concentration) with wrist in prone position.

4.Case was asked to draw in quintiles the intensity and toxicity of four smell types (irritant odours-Garlic acid and Camphor + moldy odours-Cardamom and Mentha arvensis)

RESULTS

1.PD has a dopaminergic symptom namely rigidity, resting tremors, bradykinesia and freezing gait leading on to instability in same. **Hyposmia** on the other hand harbingers these cardinal features of cardinal motor features. Interestingly hyposmia was studied to be related to auditory hallucinations or hyperluscency of Arcuate fasciculus helping it prove that auditory hallucinations were a measure of the olfactory nerve, especially asymmetric E and C of OB on tempratl lobe arcuate fasciculus during phrenal episodes in this group of patients. Hence although time-consuming can be used in early diagnosis of PD. Case was started on T. Dopamine110mg plus Carbidopamine 90mg and T. Trihexiphenidyl 25 mg.

2.Olfactory thresholds were defined by quartiles on the following Objective sheet w.r.t. known values for Mercaptan in Camphor.



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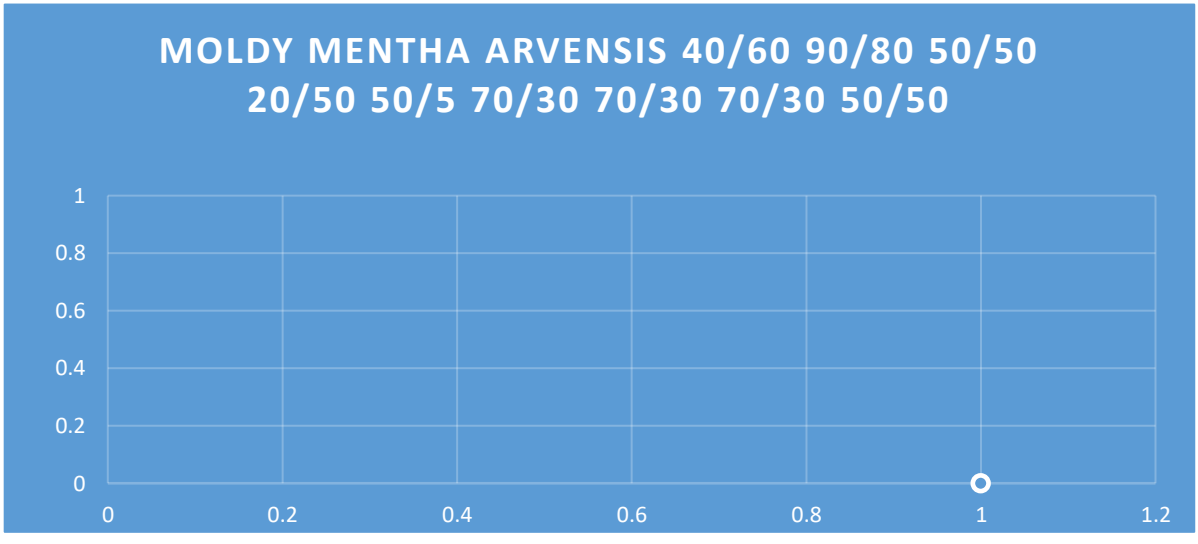
3.They was a significant increase in intensity and toxicity of moldy odours by 30% in the right direction whereas 70% decrease in the left-median being the 3rd quartile of the above quintile, approximately in both case and control. Hence it could be deduced that **olfactory memory** could simply be boosted by reinforcement of *higher consciousness.*

In comparison, it was also of value to note that with irritant odours, there was 30% increase in intensity but decrease in toxicity by 70% after the 3rd quartile in case and control both being in the right direction.

4.It could be concluded that the *threshold* of irritant odours is the least (eg. Mercaptan 0.00000004 mg/L of air) (4) c.f. moldy odours-THRESHOLD OF CARDAMOM BEING IN THE HIGHER QUINTILE RANGE OF 1.5 – 2 mg/L of air In Parkinson's and the DISCRIMINANT FACTOR in normal humans and for Mentha being 25-29 which can be taken to be the gustatory dose of the same.

PARAMETER		CONTROL					CASE				
Krusal Wallis / ODOR											
MUSKY	Garlic acid	60/30 =2	60/0 Infinity	20/80 0.25	20/50 0.4	100/40 2.5	50/50 1	95/95 1	80/60 1.3	30/70 0.4	100/70 1.4
	Camphor	70/30 2.33	75/45 1.66	15/85 0.17	30/50 0.6	15/45 0.33	50/50 1	90/85 1.05	30/60 1.5	20/80 0.25	30/50 0.5
MOLDY	Cardamom	20/70 0.29	10/70 0.14	10/90 0.11	40/60 0.06	5/80 0.06	50/50 1	30/60 0.5	20/60 0.5	90/70 1.5	5/50 0.1
	Mentha arvensis	40/60 0.67	90/80 1.12	50/50 1	20/50 0.4	50/5 10	70/30 2.33	70/30 2.33	70/30 2.33	50/50 1	50/50 1



5.Identification of smell variants was compared with the physician being the control akin to Rinne's testing (factor of inertia excluded) with some hint of lead verbally to help patient affliliate to hublis.

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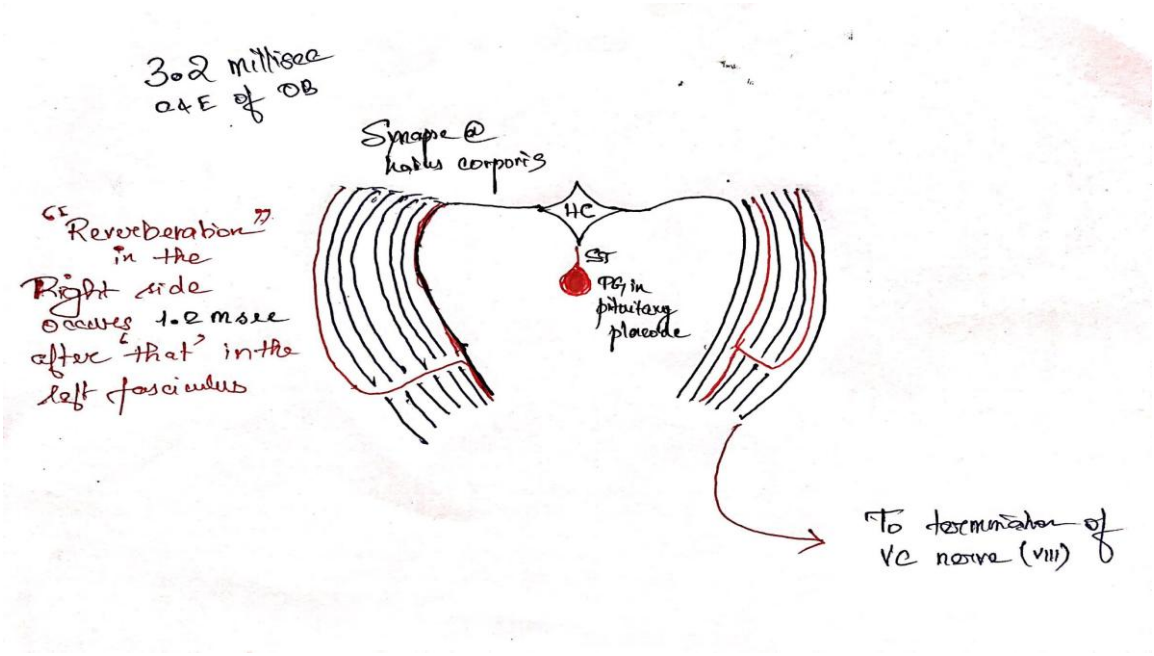
MRI brain T2-DWI: Arrow showing Hyperintense T2 weighted diffusion signals in the Arcuate fascicle. Arrow head showing calcified pineal gland.

CONCLUSIONS

1.Reverberation phenomenon or Margination reflex is a 1.2 to 5.4 millisecond synapse of neurons in the arcuate fasciculus (neuroplastically 8 in number) in response to expansion and contraction of the olfactory bulb ***due to smell variants.***

-*to be further fortified with atleast 3 scenarios by PET, SPECT or DTI.*

This is the organicity of "auditory hallucinations-Fastest Extrasensory potentials" in the brain.



2.Auditory hallucinations can be proved to exist in a patient by studying hyperluscency of 'arcuate fasciculus' and UPSIT smell study helps improve this symptom by fortifying olfactory memory boosting invoking of higher consciousness.

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3.Studied by Functional MRI, OB was studied to be pre-ordained to be be E and C to 3.2,4.2 to 5.4 causing Aud. Hall. and 8.1mmsec in different age groups in response to odour variants.

4.Although arcuate fasciculus is connected to language processing and motor functions, its hyperluscency proves a noteworthy connection to olfactory bulb which is a cylindrical structure bound to expand and contract, asymmetrically so, as function of auditory hallucination generation studied through traditional MRIs.

5.Head injury and URTI patients also exhibited hyposmia which co-related to auditory hallucinations only in the head injury recuperating subset.

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