



## ANATOMIST'S OVERVIEW OF COVID-19

## Neuroscience

**Dr Atindra Nath Datta**

MBBS,MS, Assoc Prof, Neuroscience, Richmond Gabriel University College of Medicine, St Vincent and Grenadines, West Indies

## ABSTRACT

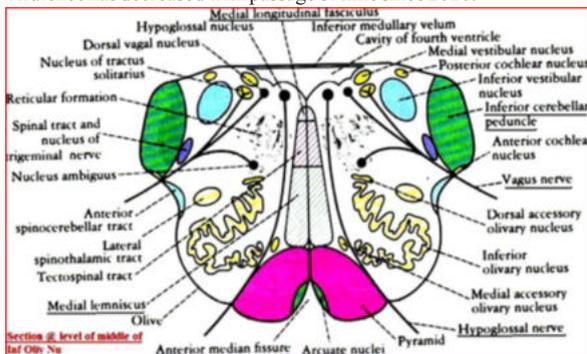
Covid-19 virus selects Vagus nerve to kill a person by slowing and stopping heart, lungs or larynx. The virus catches vagus nerve terminals at submucosa plexus at intestine, bronchi and larynx. Colchicine can be a drug to stop retrograde transmission of infection.

## KEYWORDS

Covid 19, Vagus nerve, Medulla Oblongata, Retrograde transmission, Colchicine

'Hanging' is an ancient technology to die instantly and that was studied and included by Govt. for capital punishment. The technology revealed an abrupt creation of pulling pressure of victim's own body weight on the vertebra 'AXIS' and it breaks immediately its odontoid process which in turn presses the lower medulla oblongata. The latter contains within its reticular formation the vital centers of respiration and cardiac. They stop functioning and the person dies instantly.

If studied properly it reveals in floor of the 4<sup>th</sup> ventricle where odontoid process presses the medulla oblongata including hypoglossal and vagal triangles. The covid-19 also destroys the medulla oblongata though not abruptly but similar fatally with a slower pace. The virulence has decreased with passage of time since 2020.



This is the cross section of medulla oblongata showing nerves emerging like Hypoglossal and Vagus. The Vagus includes nuclei like Nucleus ambiguus, Dorsal nucleus of Vagus and Nucleus of tractus solitarius. All these nuclei need special attention:

a) Nucleus Ambiguus supplies muscles of Larynx and Pharynx. The nerve supply of Larynx is more important than Pharynx (as cranial nerves 9 and 11 supply pharynx also). Vagus supplies larynx by its superior laryngeal nerve and recurrent laryngeal nerve. The latter is more important because most laryngeal muscles are supplied by it and partial paralysis of recurrent laryngeal nerve is more dangerous than its complete paralysis. Complete paralysis of recurrent laryngeal nerve makes vocal cord cadaveric position where vocal folds never overlap whereas **partial paralysis** does so and the affected person may **die instantly**.

b) Dorsal nucleus of Vagus is the great parasympathetic nerve in our body. It supplies heart and lungs in thorax and gastrointestinal system till left colic flexure in abdomen. Excitation of vagus cause **slowing of heart rate and respiration rate** while **increase** gastrointestinal motility so that affected **person goes to toilet** multiple time before death.

c) Nucleus of tractus solitarius is the taste nerve that contributes to 7<sup>th</sup>, 9<sup>th</sup> and 10<sup>th</sup> (vagus) cranial nerves. In Covid-19 cases patients **lose the taste sensation** in the very outset.

So the slow rate of paralysis of vagus nerve is more dangerous. It can kill a person by overlapping his vocal cords or slowing heart/respiration rate or complete stoppage of heart/lung function as is the case of hanging.

**Hypoglossal Nerve:**

In the diagram provided it may be seen that nucleus of hypoglossal is in the vicinity of Vagus nerve nuclei. When a virus affected the vagus the virus will not spare hypoglossal. But the paralysis of hypoglossal is equally fatal. The Genioglossus, the main muscle of tongue enables tongue to protrude out of mouth cavity. If virus affected hypoglossal also, may paralyse genioglossus and tongue will fall back and may obstruct laryngeal orifice. If the patient has not died by stoppage of heart/lungs or vocal cord overlapping he may die by choking of laryngeal inlet by falling back of tongue.

The advent of COVID-19 is nothing but a biological warfare mechanism to target that part of Medulla Oblongata which contains the vital centers of cardiac and respiration.

There are previous examples of using VIRAL pathway as we have seen poliovirus to target Anterior horn cells of spinal cord, Herpes Zoster virus to target intercostal nerves. In this Covid-19 scenario target has been made to vagus nerve as it can be affected by oral or nasal route.

When a patient complains of no taste/ or diarrhoea means he has been affected by oral route. May be presented with upper/lower respiratory symptoms like sneeze, cough and cold with fever, the route may be nasal.

**Histological route of transmission and nerve affection:**

The virus traps the nerve endings at submucosa plane and travels by rail road mechanism of neurofilaments aided with Dynein motors. The retrograde pathway is rapid and soon reaches the nuclei of Vagus mainly and hypoglossal later. The diagram shows place of medulla oblongata where many independent nerves converge eg; vagus, hypoglossal, accessory, reticular formation, inferior olivary nuclei, medial lemnisci etc. But out of them vagus itself is sufficient enough to kill a person much earlier than affection of other nuclei.

From the study of poliomyelitis and Herpes Zoster, it may be seen that virus prefers thick myelinated A alpha nerves so that it may contain robust system of neurofilaments and railroad. This may enable virus to infect nerve quickly by retrograde transmission.

**Covid-19 Design:**

It is such a virus designed to affect Vagus nerve mainly. The selection of vagus is so intelligent that it supplies Heart, lungs and Larynx. These organs can single handedly kill a person.

**How to stop retrograde transmission:**

It may be noted that retrograde transmission is effectuated by integrity of neurofilaments which may be inactivated by treatment with COLCHICINE. This drug may be used prophylactically with vaccines.

I know ATROPINE works against parasympathetic symptoms but how much it works here needs trial.

**REFERENCES:**

- 1) Inderbir Singh's textbook of human Neuroanatomy, Jaypee Brothers Medical Publishers (P) Ltd, Tenth Ed. 2018.
- 2) Allan Siegel: Neuroscience: Pretest, Self Assessment and review, International 2<sup>nd</sup> edition, McGraw-Hill, 1996
- 3) Samarendra Mitra: Anatomy, Academic Publishers, Kolkata Ed, 1979