

# Self-Administration of Vecuronium by a Medical Student: An Autopsy Case Report

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## Abstract

During COVID-19 pandemic the frontline healthcare workers have been at risk the most. Long working hours, emotional stress from not seeing families for days together takes a toll on the psychological well-being of a person. This leads to increase incidence of self-harm amongst the individuals. Vecuronium bromide is a muscle relaxant, easy availability of such drugs amongst the medical professionals is a matter of great concern. Monitoring and cautious dispensing of them should be done. Here we report a case of self-administration of vecuronium by a medical student. The purpose of documenting this case is to create awareness among healthcare workers to keep a watch on mental health of fellow colleagues. Psychological support groups in medical college hospitals are the need of hour.

**Key words:** Vecuronium, Self-Administration, Medical Student, COVID-19

## Introduction

Vecuronium is a mono-quaternary ammonium compound. It works by competitively inhibiting acetylcholine at post junctional nicotinic cholinergic receptor sites. It is used worldwide as muscle relaxants prior to intubation and surgical procedures. Though not available as over-the-counter medication, but it is easily available in the operation theatres worldwide. The easy availability and simple administration technique make it a potential drug of abuse amongst the medical and paramedical staff. COVID-19 times have been emotionally stressful for all people<sup>1</sup>. Healthcare professionals are not an exception. This has led to widespread use of easily available drugs. Vecuronium is a steroidal, mono-quaternary ammonium compound

acting as a non-depolarising muscle relaxant. It competitively inhibits acetylcholine at post junctional nicotinic cholinergic receptor sites. It has intermediate duration of action, so used widely during intubation. Patient recovers about 95% within 45 minutes to 65 minutes. It is available as a lyophilised powder. Adverse drug reactions are rare and seen in 1% of the cases<sup>2</sup>. It is mainly excreted via bile and urine. Due to causation of the respiratory insufficiency caused by vecuronium, it should be administered cautiously and only by experienced doctors and nurses. The respiratory depression is the main cause of death in cases of toxicity. Here we present autopsy findings of a case of self-administration of vecuronium by a medical student.

## Case Report

We received a case of a 26-years-old medical student with an alleged history of vecuronium injection. On investigation of crime scene, it was found that the room was locked from inside and a syringe along with an empty vial of vecuronium (Brand NEOVEC-10) was retrieved. Upon taking history, we came to know that the deceased had completed his duty at COVID-19 ward

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following which he contracted COVID-19. This had caused a great emotional trauma and was depressed for which he was taking psychiatry consultation.

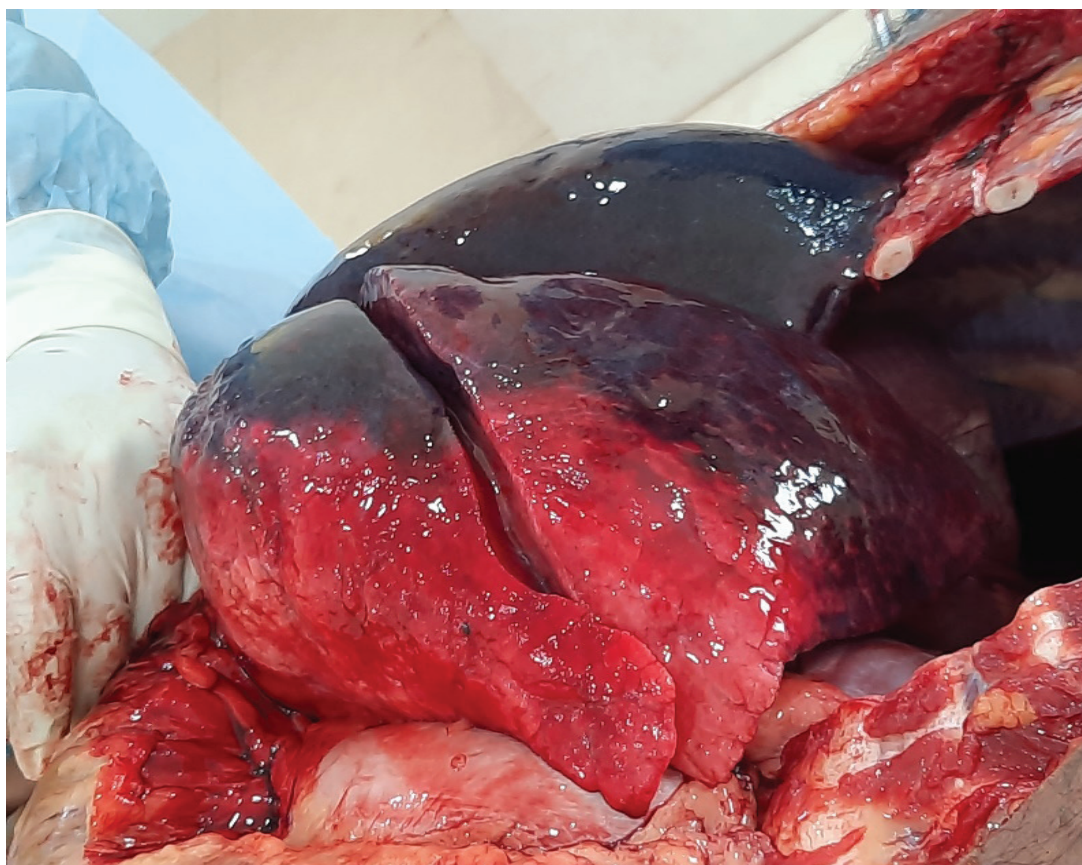
External examination of the deceased showed that the face was congested. The conjunctiva of both the eyes was deeply congested. Nail beds were bluish. Seminal fluid discharge was seen from the penile tip. Multiple injection puncture marks were seen over the left cubital fossa.

On dissection, the lungs were deeply congested and oedematous. (Fig. 1). Right lung weighed 1200 grams and the left lung weighed 880 grams. The stomach contained 500 grams of partially digested food materials with no appreciable odour. Mucosa was deeply congested and Sub mucosal haemorrhage was present diffusely.

All the internal organs were congested. Skin along with subcutaneous tissue taken from punctured wound site, blood and routine viscera comprising of stomach, small intestine, liver and half of each kidney were collected and sent for chemical analysis at State Forensic Science Laboratory.

Chemical analysis of the skin along with subcutaneous tissue revealed presence of vecuronium which was also found in blood. The technique used for determination was High Performance Liquid Chromatography. The routine preserved viscera report was negative for presence of any toxic compounds.

The final opinion regarding cause of death was stated as respiratory failure as a result of self-administration of Vecuronium.



**Fig1: Lungs showing congestion and edema.**

## Discussion

COVID-19 pandemic times have been stressful to all, but the frontline healthcare workers have been the most at risk. Long working hours, emotional stress from not seeing families for days together takes a toll on the psychological well-being of a person<sup>1</sup>. This has led to increase incidence of self-harm amongst the individuals. Vecuronium is an easily available drug to the healthcare workers which leads to its misuse<sup>3-4</sup>. Very few cases have been reported in literature regarding suicides by vecuronium and most of them are of healthcare workers<sup>4-5</sup>. Post-mortem quantitative analysis of vecuronium and its active metabolite concentration is important for arriving at the conclusion<sup>6</sup>. Though suicides using vecuronium is uncommon, but suicides by using similar compounds have been stated in literature<sup>7-8</sup>.

This case during the COVID-19 times gives an insight about the stress both emotional and physical which a health care worker endures while performing his duties. There is now a dire need of psychological support system to be in place for the healthcare workers to prevent such instances. The easy approachability of the drugs should be controlled. The need for prompt treatment and research into safer alternatives is the need of the hour.

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**Ethical Clearance:** Taken from Institutional Ethical Committee, AIIMS Bhubaneswar. The identity of the deceased was not revealed in the manuscript.

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