

Case Report

Tragic Tapentadol Abuse- A Case Report

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Abstract

Narcotic drug abuse is the centre of everyone's attention, as its being prevalent in the younger generation world. The use of the narcotics is being misused, due to its various actions on our body. The awareness about the dangerous side effects of these compounds have been overseen by the younger population. Herein is a case report of a narcotic drug abuse death, wherein Tapentadol tablets were used intravenously. The individual had fibrosed cord like veins and all organs were congested with pulmonary oedema. Viscera came to be positive for Tapentadol compound. Regarding drug abuse related deaths, detailed crime scene investigations, full autopsy, toxicological analysis together gives autopsy surgeons an easy way to approach these kinds of cases.

Keywords: Tapentadol; Narcotics; Cordlike veins; Pulmonary oedema; Respiratory depression

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Introduction:

Tapentadol is a centrally acting opioid analgesic which has dual mode of action. It acts via μ -opioid receptor (MOR) agonism and norepinephrine reuptake inhibition (NRI)¹. Tapentadol, 3-[(1R,2R)-3-(dimethyl amino)-1-ethyl-2-methylpropyl]-phenol, was developed from the structures of morphine, tramadol and its metabolite O-desmethyltramadol². Tapentadol has a low affinity for μ -opioid receptor, therefore leading to the decreased side effects. However, because of the norepinephrine reuptake inhibition, it has great effectivity³. It is available in immediate release and extended-release shock and in extreme cases forms, currently in India. However, unlike other opioids, this is available only in oral formulations and not parenteral

preparations⁴. Tapentadol proves to be an oral analgesic for moderate to severe acute pain, neuropathic pain associated with diabetic peripheral neuropathy, and also chronic low back pain and osteoarthritis pain^{3,5}. Because of less drug interactions due to its insusceptibility to CYP2D6 polymorphisms, it is a drug more prone for misuse and abuse of it. The ease in preparation of the solution form of these oral drugs proves the misuse of it among the young generation⁴.

Case Report:

A 22-year-old male was found unconscious in a forest, where human inhabitation was told to be less. At the scene, there were tablet strips of Tapentadol, normal saline bottles and insulin syringes (Figure no:1). He was immediately taken to nearby hospital where he was declared brought dead. According to police sources, the individual was reconstituting the tablets in saline and injecting himself intravenously, intramuscularly and subcutaneously. On external examination, there were fibrosed

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Figure:1- Tapentadol tablets, saline bottle and insulin syringes at the scene of crime.



Figure:2- Fibrosed cord like veins.



Figure:3- Edematous and congested lungs.

cord like veins, over the antecubital fossae, showing skin discoloration (Figure:2). There were multiple small abrasions over the abdomen. On internal examination, all organs were congested, with full bladder and lungs showed subpleural petechiae (Figure:3). Viscera, skin from the injection sites and urine sent for chemical analysis came out to be positive for Tapentadol compound. Organs sent for histopathological examination revealed lungs to be congested, oedematous fluid in alveoli, widened alveolar septa with lympho-histiocytic infiltration, foreign

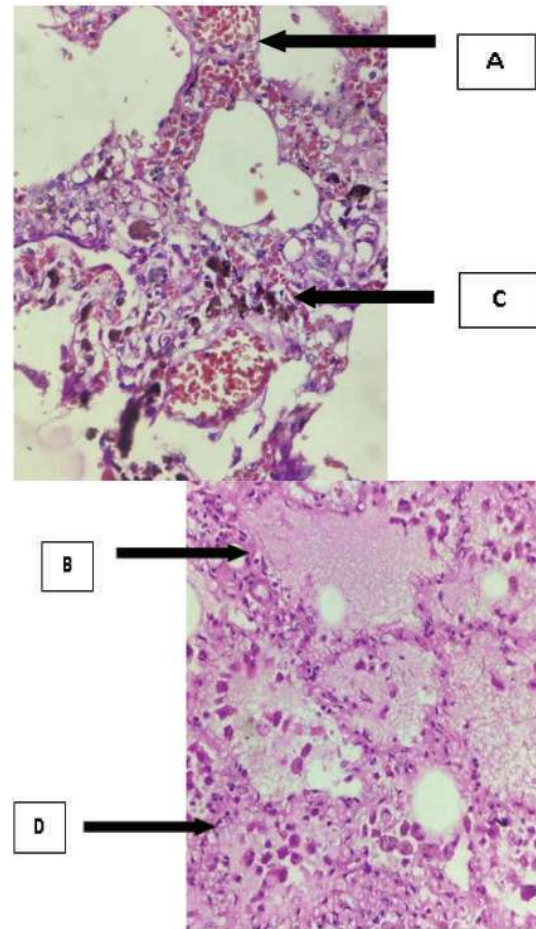


Figure:4- Histopathological findings in lungs

A: Congested and widened alveolar septa

B: Oedematous fluid in alveoli

C: Hemosiderin laden macrophages

D: Lympho-histiocytic infiltration

body giant cells and hemosiderin laden macrophages.

Discussion:

Tapentadol, an opioid analgesic similar to Tramadol in its properties, has been shown to increase in the trend of its abuse. According to data reviewed by World Health Organisation (WHO) expert committee in 2014, it was found that Tapentadol has reinforcing properties in animal models, producing tolerance and withdrawal similar to other opioids like Hydromorphone making it a 'drug liking' profile⁴. Its bioavailability in oral preparations is 32%, which makes it three

times more available in the bloodstream when substituted for intravenous preparations. This makes it evident for the respiratory depression associated with it⁴. Walter Kemp et al. reported a case of Tapentadol abuse in a 34-year-old male, who had abused this drug intravenously, proving the giant cells on microscopic examination³. He went on to tell that no specific findings of Tapentadol abuse could be found at autopsy except for the cone like froth from mouth, pulmonary oedema and increased urine in the bladder, along with toxicological analysis, to support the diagnosis of Tapentadol toxicity³. Another case was reported by Misbahuddin Khaja et al, of a 32-year-old woman who had abused Tapentadol by reconstituting it in solution form by crushing the tablets and mixing them in saline, later injecting it intravenously. The cause of death was opined to be respiratory depression due to Tapentadol toxicity, leading to cardiac arrest⁶. The capability and easy reconstitution of this drug has been proved by Mukherjee et al, by the fact that the drug could be easily mixed in normal saline and injected intravenously, without the need of special equipment except for syringe and normal saline. This leads to its ease of tampering and syringeability⁴. The double mechanism of action of this drug μ -opioid receptor (MOR) activation and Noradrenaline reuptake inhibition (NRI) supports its theory of not responding to Opioid antagonists like Naloxone. Most of the other opioids have only mechanism of action of MOR, leading to their response to the antagonist⁷. In India, till 2019, Tapentadol did not include whether it was a schedule H1 or X drug in its packaging. In 2021 the Drugs (3rd Amendment) Rules, included this drug as the 48th drug in its list of Schedule H1 drugs, due to the increasing abuse of its over-the-counter availability⁸. Tapentadol is not included in the Narcotic Drugs and Psychotropic Substances act yet. Its sale along with its combination with Carisprodol has been banned to outside

countries from India due to its addictive properties⁹. The cause of death attributing because of this compound, has been published by various authors to be respiratory depression, cardiac arrest, CNS depression, serotonin syndrome and coma^{10,11,12}. The difference between acute and chronic drug assumption, can be told histopathologically, with lungs showing pulmonary granuloma and giant cells with chronicity, therefore substantiating the fact that in our case report the lungs revealed lympho-histiocytic infiltration, foreign body giant cells and hemosiderin laden macrophages¹³ (Figure:4). Regarding drug abuse related deaths, detailed crime scene investigations, full autopsy, toxicological analysis together gives autopsy surgeons an easy way to approach these kinds of cases, as was followed in our current case¹³.

Conclusion:

The manufacturing and sale of Tapentadol drug must be restricted and should be given to individuals only on submission of prescription. Awareness among the public regarding the adverse effects of drugs must be emphasized to prevent such untoward incidences. Vigorous pharmacovigilance for Tapentadol must be ensured. Autopsy surgeons can follow a detailed diagnostic algorithm to combat the drug related deaths.

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