Letter to Editor
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Understanding Forensic Pharmacology: What Indian Pharmacologists need to know?

Dear Sir / Madam,

Pharmacology is a branch of medical science which deals mainly with drug classifications, actions, side effects and therapeutic uses. "Goodman & Gilman's The Pharmacological basis of Therapeutics" describes subject of pharmacology as a broad one that embraces the knowledge of the source, physical and chemical properties, compounding, physiological actions, absorption, fate, excretion and therapeutic uses of drugs.[1] It also defines drug as any chemical agent that affects living protoplasm.[1] This definition of drugs includes the poisons and toxic chemicals as well. Toxicology is concerned with the deleterious effects of the poisons and chemical agents on all living systems.[2] Toxicology is included as a part of Forensic Medicine for Medical curriculum in India. It is defined as the science that involves detection of drugs and poisons in biological specimens and its application for medico-legal purposes.[3]

The interpretation of drug effects, use or abuse and its duration of action for the medico-legal process is referred to as Forensic Pharmacology.[4] A fine line differentiates Forensic Pharmacology from Toxicology. Some textbook use terms like "Pharmacological toxicology" for assessing the toxicity of therapeutic agents.[5] Parikh's textbook of Medical jurisprudence, Forensic medicine & Toxicology, mentions Forensic Pharmacology as a part of Forensic medicine.[3] It discusses toxicities from the drugs in common therapeutic use, commonly abused drugs, drugs having no medicinal value and "street" or "designer drugs".[3] Thus Forensic pharmacology forms an interface between forensic medicine, toxicology and pharmacology.

With evolving use of technology and advances in pharmacology it is essential to expand the horizons of pharmacology beyond therapeutics. "Forensic Pharmacology" is an important subspecialty which enables use of pharmacologist's expertise in Medico-legal cases. The pharmacokinetics and pharmacodynamics of drugs differ in living and dead, leading to differing interpretation of laboratory reports and has medico-legal implications which forms basis of Forensic Pharmacology.[6] Substance abuse, doping, forensic pharmacokinetics, drug interactions or adverse drug reactions leading to medicolegal issues, use or abuse of drugs, personal injury or death due to drug exposure, environmental exposure to chemicals and forensic pharmacovigilance are the other aspects of Forensic Pharmacology.[7]

Basic principles of Forensic Pharmacology include the use of common drugs/poisons that are encountered by the practicing clinicians and the approach to determine their medico-legal role in establishing the cause of death, injury or a disease. It also includes the postmortem toxicology and key concepts related to the medico-legal consequences of the effects and toxic actions of drugs used in humans.[4,7]

While learning pharmacology the students learn key concepts that are important to understand the drug actions, including principles of pharmacokinetics as well as the physiological and cellular basis of diverse drug actions. Topics that are explored in forensic pharmacology include pharmacokinetics of the toxic drugs, impairment versus intoxication and how the interpretation of drug effect is utilized in the criminal court setting. For example, the science of ethanol and drugs of abuse, along with other important agents (sports doping drugs, therapeutic drugs, etc.).[4,7] An introduction to the basic applied laboratory methods of forensic toxicology is also a part of Forensic Pharmacology which includes; biological samples, analytical schemes, and some of the special problems commonly encountered in forensic toxicology.[4,7]

Forensic pharmacology should enable the students to accurately appraise pharmacological and toxicological data for medicolegal purposes, to explain and justify their scientific opinions and to apply this knowledge to present the scientific opinions in court of law. It will also help to interpret scientific data obtained from multiple sources and compile this information to assess how various biological factors that may alter the drug actions. It will further help to identify the proper methods for collection of toxicological data from different biological sources. It can also help in describing the roles of the biological factors in individual and selective toxicities.

In the era of expanding and changing scientific

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concepts, the knowledge of Forensic Pharmacology will enable Indian pharmacologists to explore new options for research. It will also add up new tools and entirely new dimensions to investigate the medico-legal cases in India.

Conflict of Interest

None Declared

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