Pulmonary Manifestations and Outcome of Intravenous Drug Users Admitted to Abassia Chest Hospital

Thesis

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List of Abbreviations

Abb.	Full term
ABG	Arterial blood gases.
AIDS	Acquired immune deficiency syndrome
BAL	Bronchoalveolar lavage
BUN	Blood urea nitrogen
CAP	Community acquired pneumonia
CMV	Cytomegalo virus
CNS	Central nervous system
COPD	Chronic obstructive pulmonary disease
CT	Computed tomography
CVS	Cardiovascular system
CXR	Chest x-ray
DM	Diabetes mellitus.
ECG	electrocardiogram
EPS	Extrapyramidal side effects
ESR	Erythrocyte sedimentation rate.
GOLD	Global initiative for chronic obstructive lung disease
HAP	Hospital acquired pneumonia
HCV	Hepatitis c virus
HIV	Human immune deficiency virus
ICU	Intensive care unit
LAB	Laboratories
MDR	Multidrug resistance
MV	Mechanical ventilation
PCP	Pneumocyst carnii pneumonia
PE	Pulmonary embolism
PFT	Pulmonary function test
TB	Tuberculosis.
TLC	Total leucocytic count
WHO	World health organization
ZN stain	Ziehl nielsen stain

INTRODUCTION

Pulmonary manifestations are extremely common in injection drug users (IDUs). The lung is the target of numerous infectious and noninfectious insults. The latter include bronchospasm, airflow obstruction, diffusion impairment, emphysema, and pulmonary hypertension. Pulmonary hypertension and alveolar hemorrhage are associated with the injection of cocaine ***(Wolff and O'Donnell, 2004).*** An increased prevalence of pulmonary hypertension, independent of the presence of septic pulmonary emboli, has been reported in individuals who inject buprenorphine ”**buprenorphine is a prescription medicine indicated for the maintenance treatment of opioid dependence**” ***(Ho et al., 2009).***

Pulmonary edema is one of the critical complications of heroin overdose and may result in sudden death or necessity for admission to hospital. Pulmonary edema is present in nearly all fatal cases of opioid overdoses. Though not diagnostic, foam cone is a relatively common finding, typically occurring >3 h after the last opioid use ***(Dinis-Oliveira et al., 2012).***

Infective endocarditis (IE) is a common cause of bacteremia in IDUs. HIV infection has also had an effect on the epidemiology of IE among IDUs ***(Cooper et al., 2007).*** The incidence of IE is four times higher among IDUs with HIV than among seronegative IDUs ***(Wilson et al., 2002).*** The triad ‘‘intravenous drug addiction + staphylococcal septicemia+ -

pulmonary embolism'' is pathognomonic for tricuspid valve endocarditis ***(Chao et al., 2004).***

Human immunodeficiency virus (HIV) and hepatitis C virus (HCV) are the two blood-borne pathogens most commonly transmitted among injection drug users via multi-person use of syringes and other injection equipment. The Acquired Immunodeficiency Syndrome (AIDS) recognized first in 1980–81 in patients diagnosed with Kaposi's sarcoma and Pneumocystis Carinii Pneumonia(PCP), was attributed to the Human Immunodeficiency Virus (HIV) infection. IDUs accounted for 54% of cases of acute HCV infection in 2006 in USA ***(Wasley et al., 2008).***

Pneumocystis pneumonia (PCP) has historically been one of the leading causes of disease among persons with AIDS. Although a decline in incidence of PCP occurred during the era of highly active antiretroviral therapy (HAART), PCP remains the most common serious opportunistic illnessin HIV-infected persons ***(Kaplan et al., 2000).***

People who use and inject illicit drugs are at high risk of contracting tuberculosis, whether or not they are infected with the human immunodeficiency virus (HIV). Studies conducted before and after the emergence of HIV infection show that, when compared with the general population, people who use illicit drugs have a higher risk not just of getting tuberculosis infection, but also of developing active disease ***(Deiss et al., 2009; Getahun et al., 2012).***

AIM OF THE WORK

To assess pulmonary manifestations and outcome of intravenous drug users patients admitted to Abassia chest Hospital.

Chapter 1

DRUG & ADDICTION

Definition of addiction ***(American Society of Addiction Medicine, 2011):***

Addiction is a primary, chronic disease of brain reward, motivation, memory and related circuitry. Dysfunction in these circuits leads to characteristic biological, psychological, social and spiritual manifestations. This is reflected in an individual pathologically pursuing reward and/or relief by substance use and other behaviors.

Manifested by three (or more) of the following:

1. **Tolerance**, as defined by either of the following:

a) A need for markedly increased amounts of the substance to achieve intoxication or the desired effect

or

b) Markedly diminished effect with continued use of the same amount of the substance.

2. **Withdrawal,** as manifested by either of the following:

a. The characteristic withdrawal syndrome for the substance.

or

b. The same (or closely related) substance is taken to relieve or avoid withdrawal symptoms.

3. **The substance** is often taken in larger amounts or over a longer period than intended.
4. **There is a persistent** desire or unsuccessful efforts to cut down or control substance use.
5. **A great deal** of time is spent in activities necessary to obtain the substance (such as visiting multiple doctors or driving long distances), use the substance (for example, chain-smoking), or recover from its effects.
6. **Important social,** occupational, or recreational activities are given up or reduced because of substance use.
7. **The substance** use is continued despite knowledge of having a persistent physical or psychological problem that is likely to have been caused or exacerbated by the substance (for example, current cocaine use despite recognition of cocaine-induced depression or continued drinking despite recognition that an ulcer was made worse by alcohol consumption).

➢ Opioids and addiction

Opioids are a class of drugs that include the illegal drug as heroin, synthetic opioids such as fentanyl, and pain relievers available legally by prescription, such as oxycodone (OxyContin®), hydrocodone (Vicodin®), codeine, morphine, and many others. These drugs are chemically related and interact with opioid receptors on nerve cells in the body and brain. Opioid pain

relievers are generally safe when taken for a short time and as prescribed by a doctor, but because they produce euphoria in addition to pain relief, they can be misused (taken in a different way or in a larger quantity than prescribed, or taken without a doctor's prescription. Opioid pain relievers can lead to overdose incidents and deaths. Opioids can be also categorized as endogenous (endorphins, enkephalins, dynorphins), opium alkaloids (morphine, codeine), semisynthetic (heroin, oxycodone [Roxicodone, OxyContin]), or synthetic (methadone [Dolophine], fentanyl [Sublimaze, Duragesic]). The last three categories have a wide range of clinical uses including analgesia, anesthesia, antidiarrhea, cough suppression, and detoxification and maintenance therapy ***(National Institute on Drug Abuse, 2016).***

Mechanism of action

Synthetic Opioids mimic the actions of endogenous opioid peptides by interacting with μ, δ or K opioid receptors. The opioid receptors are coupled to G1 proteins and the actions of the opioids are mainly inhibitory. They close N-type voltage-operated calcium channels and open calcium-dependent inwardly-rectifying potassium channels. This results in hyperpolarization and a reduction in neuronal excitability. They also decrease intracellular cAMP which modulates the release of nociceptive neurotransmitters (e.g. substance P). Inhibition of prostaglandin synthesis by cyclooxygenase is the principal mode of the analgesic and anti-inflammatory actions of NSAIDs ***(Bovill, 1997).***

- ***Heroin***

What is heroin and What are its medical effects? *(National Institute on Drug Abuse, 2016)*

Heroin is an opioid drug made from morphine, a natural substance taken from the seed pod of the various opium poppy plants grown in Southeast and Southwest Asia, Mexico, and Colombia. Heroin can be a white or brown powder, or a black sticky substance known as black tar heroin. Heroin is highly addictive. People who regularly use heroin often develop a tolerance people inject, sniff, snort, or smoke heroin. Some people mix heroin with crack cocaine.

Heroin enters the brain rapidly and binds to opioid receptors on cells located in many areas, especially those involved in feelings of pain and pleasure and in controlling heart rate, sleeping, and breathing.

Short-Term Effects

People who use heroin report feeling a "rush" (a surge of pleasure, or euphoria). However, there are other common effects, including:

- Dry mouth.
- Warm flushing of the skin.
- Heavy feeling in the arms and legs
- Nausea and vomiting