

A Deleterious Combination of Intravenous Drug Usage with HIV and Chronic Hepatitis Infection; How Renal Replacement Therapy Emanated?

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Abstract

Intravenous drug usage of substances like cocaine and heroin; encompasses a spectrum of generalized state of illness. A continuum insult which predispose patients to chronic viral illnesses, bacterial infections and subsequently end organ damage due to multiple factors. The renal structure is one of the target organs involved in this process, by which a majority of them will lately developed end stage renal disease and as a result renal replacement therapy. However, the spectrum of complications of this population is enormous starting with acquire infections like HIV, Hepatitis C, Hepatitis B, severe skin infections, pneumonias, cardiovascular diseases, endovascular complications as the well-known Lemierre's syndrome, central nervous system infections, systemic complications like renal failure ending up in hemodialysis and most of them with a low expectancy of life. In our population 69 patients were randomly with a mean age of 44 years assign for investigation all of them known to have a poor social support in conjunction with intravenous drug usage of cocaine and heroin. All these patients were study using the electronic medical record system, several conditions were measure like HIV, Hepatitis B, Hepatitis C, Hypertension and Diabetes mellitus. Of the patients been study the admission diagnosis that lead to renal replacement therapy was recorded, and later in the process compared. Our population of 69 patients, 16 of them ended up in hemodialysis 23% (16/69), of this patients that had renal replacement therapy 4 of them had Hepatitis C 25% (4/16), Hepatitis B 19% (3/16), HIV 13% (2/16), Hypertension 6% (1/16) and Diabetes mellitus 6% (1/16) respectively. There were several precise findings that lead to hemodialysis in the population, with the majority been infected ulcers 25% (17/69), pneumonia 20% (14/69), upper gastrointestinal bleeding in 10 % (7/69) and symptomatic anemia 10% (7/69) respectively. All of this patient did not have good social support, none of them knew about the long-term consequences of renal failure and most of them did not had positive approach of stopping intravenous drug usage. As a whole, illicit intravenous drug usage is associated with a broad spectrum of diseases, all of them creating a rapid deleterious clinical picture; mostly debuting to medical assistance with infectious etiologies.

Introduction

Intravenous drug usage started from way back into history in which weapons with injection material were used to introduce malignant substances to enemies as a combat weapon. However, it was the beginning of what we can call one of the worse medical and psychological illnesses now a day. Socioeconomic conditions, lack of education and behavioral characteristics, may be more associated with the acquisition of chronic viral infections such as HIV and Hepatitis in several populations. The complications of intravenous drug usage comprise different malignant processes in which the human body is been affected, at some point affecting all the organ system, commanding to artificial medical supplies as utmost of them leading to death as an end point. Intravenous drug use has been associated with several neurological, cardiovascular, pulmonary, lymphatic, hematological and vascular diseases. Though, renal involvement is usually very aggressive due to glomerular,

interstitial and vascular damage. Renal function deterioration has been attributed to glomerular damage as nephrotic syndromes or nephritic syndrome, leading several etiologies such as the most common of all focal segmental glomerulosclerosis. Conversely, there is a direct correlation between renal failure with intravenous drug usage and consequently requiring renal replacement therapy. The acute and chronic effects of intravenous drugs like cocaine and heroine is broad, more likely affecting vascularity, however concurrent effects with viral infections, has become apparently more deleterious. The acute effects are thought to be at least partially caused by vasoconstriction, vasoconstriction more prominently affecting arterioles causing end organ hypoperfusion and if becomes chronic, end organ dysfunction. This mechanism is not only associated with active drug ingredients of cocaine and heroine, it also permutes other substances use upon elaboration. The most important task in this experiment is to identify risk factors and further

establish synergistic effects causing progression of renal failure into lifetime renal replacement therapy.

Materials and methods

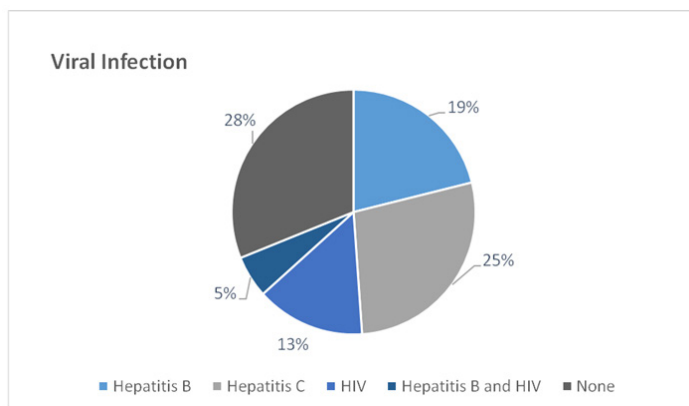
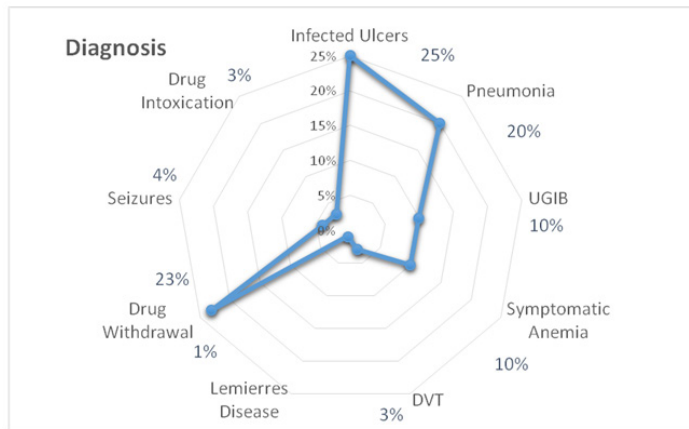
The audit was performed by an observational retrospective review of medical records after Institutional Review Board (IRB) approval by the San Juan City Hospital. Our study was a retrospective analysis of patients admitted with documented comorbidities of intravenous drug usage on adult patients. The information was obtained from the clinical records under strict confidentiality. Data collected was utilized and studied using a T test for analysis of results. Information regarding age, social status support, past medical history and diagnosed viral infections if any. Individuals younger than 18 years old, and patients without intravenous drug usage were excluded.

Discussion/Results

In this retrospective observational research study, we provide clinical information regarding risk factors and progression of IVDA patients until renal replacement therapy develops. We will highlight some of the most challenging areas in the management of this group of patients, including most common diagnostic presentation in which lifetime renal replacement therapy (RRT) was started. As well we will identify most common complications, in which systemic complications are evident. Several conditions were seen in this populations which included, soft tissue infections, pneumonia, Lemierre's syndrome, deep vein thrombosis and bacteremia. The prevalence of active hepatitis C, hepatitis B and HIV infection in this retrospective cohort was 25%, 19%, and 13%. Our study population was of 69 patients, in which 23% of these patients ended up in lifetime renal replacement therapy, at a mean age of 44 +/- 6. Renal replacement therapy was offer to all these patients and only 15% of them knew about renal replacement therapy. There were several precise findings that lead to hemodialysis in the population, with the majority been infected ulcers of the lower extremities 25% (17/69), pneumonia 20% (14/69), upper gastrointestinal bleeding in 10% (7/69), symptomatic anemia 10% (7/69), DVT 3% (2/69), Lemierre's Disease 1% (1/69), drug withdrawal 23% (16/69), seizures 4% (3/69) and drug intoxication 3% (2/69) respectively. Patients who use intravenous drugs in conjunction with poor social support and low socioeconomic status lack responsibility knowledge that requires adjustment regimens of renal replacement therapy. Not only renal disease is taking a big role in this population, so is housing problems by which the majority of them are homeless or with inadequate living circumstances, and in most of the cases makes renal replacement therapy non-viable in the outpatient setting. Not only this patients' needs to be complaint with renal replacement therapy, they need to surpass the necessities to inject drugs having a rapid pathway with a renal catheter. Of the major complications seen in this populations that didn't follow recommendations fluid and electrolytes were the major issues in recurrence to the hospital. All these circumstances made a median survival of approximately 11 months respectively after initial diagnosis. Our analysis found association between intravenous drug usage and rapid onset renal failure requiring renal replacement therapy, as well we found increase prevalence of chronic viral infections with this population. All of them concurrently affected by poor social support with a direct correlation with poor compliance with renal replacement therapy.

There are multiple etiologies and propose mechanism of actions by which cocaine affects the kidneys. Cocaine has a specific sympathetic activation by which vasoconstriction is been induced

in arterioles causing ischemic changes. With this cascade cocaine inhibits vasodilatory effects, alters vascular homeostasis and induces improperly oxidative stress. Activation of platelets are currently induced by cocaine as well stimulating micro aggregates and consequently decrease blood flow. As cocaine our second variable is heroine, by which direct toxicity is mediate by external components use in drug elaboration. This fact makes heroine a causative agent of a wide spectrum of pathology that is found among heroin users.



Conclusion

This study provides evidence of the strong association between intravenous drug usage and higher rates of renal replacement therapy. A strong association between infectious etiologies were also observed as well a strong association with mortality. Personalize interventions to serve this communities will help on reaching pertinent compliance with renal replacement therapy major requirements.

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San Juan City Hospital

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