

Unusual Case of Simultaneous Acute Hepatitis and Acute Pancreatitis in a Bodybuilder

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Received: December 26, 2018; Accepted: December 31, 2018; Published: February 02, 2019

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Introduction

The use of anabolic steroids is widespread, particularly among bodybuilders. Most athletes have only a crude pharmacological knowledge regarding these drugs and warnings of steroid misuse are neglected. The illicit use of Androgenic Anabolic Steroids (AAS) to obtain an athletic, healthy looking body can lead to serious and often irreversible organ damage [1]. Anabolic steroids with 17 alpha carbon substitutions have been associated with a cholestatic injury with little hepatocellular injury. In the case of hepatotoxicity and severe cholestasis the prompt withdrawal of the steroid and the administration of ursodeoxycholic acid are recommended [2]. Steroid also is known to cause acute pancreatitis which would result in acute onset abdominal pain and vomiting. Possible mechanisms for drug-induced pancreatitis include immune-mediated inflammatory response, direct cellular toxicity, arteriolar thrombosis, and metabolic effects.

Case Report

A 22 years old male, physical trainer by profession, presented with jaundice for 1 month. It was associated with generalized pruritus and passage of clay colored stools with no prodromal symptoms. He also had severe upper abdominal pain since 5 days which was of sudden onset, continuous, radiating to the back. He was non-alcoholic with no major illness in the past. On inquiry, he had no fever, abdominal distension, swelling of

feet, hemetemesis, malaena. He had anorexia and weight loss of 7 kilograms (10.14% of body weight) in one month. On further inquiry, he gave a history of drug and supplement intake for his bodybuilding profession for 2 months. He was receiving intramuscular injections of testosterone complex 250 mg weekly for 10 weeks along with injectable boldenone undecylenate 250 mg. He was also taking oxymetholone 50 mg once daily orally initially for 7 days and then in gradually increasing doses every 6 hours over the next 3 weeks. He procured these medications from an individual at the local gymnasium and was consuming them till 3 weeks prior to his admission in the hospital. On examination, he had icterus and scratch marks all over his body associated with mild epigastric tenderness. Liver function tests showed a cholestatic pattern and serum amylase was raised. The bulky pancreas was noted on abdominal ultrasound. Computed tomography of the abdomen revealed bulky heterogeneously hypo enhancing edematous pancreas surrounded with free fluid with normal pancreatic duct and no evidence of necrosis or calcification (Figure 1). His Bedside Index of Severity in Acute Pancreatitis (BISAP) was 0/5 and CT severity index 2/10. Other etiologies of hepatitis were ruled out as serology for HBsAg, anti-HCV, Hepatitis A and E was negative. As Drug-induced liver injury is diagnosis by exclusion, autoimmune markers did. ANA, ASMA, Anti LKM-1, were negative and serum IgG was normal. Serum triglyceride, cholesterol and PTH were normal. He was managed

conservatively and abdominal pain subsided over a week. Magnetic resonance cholangio pancreatography (MRCP) done for structural causes of pancreatitis revealed normal pancreatic duct with no evidence of pancreatic edema and preserved liver and biliary tree morphology. Liver biopsy revealed bland

cholestasis with no evidence of cellular infiltrate, steatosis or bile duct proliferation (Figure 2). Patient recovered gradually, both clinically and biochemically. He was asymptomatic at discharge. He is on regular follow up and liver function tests are improving (Table 1).



Figure 1: CT abdomen. Arrow showing bulky pancreas without any peripancreatic fluid

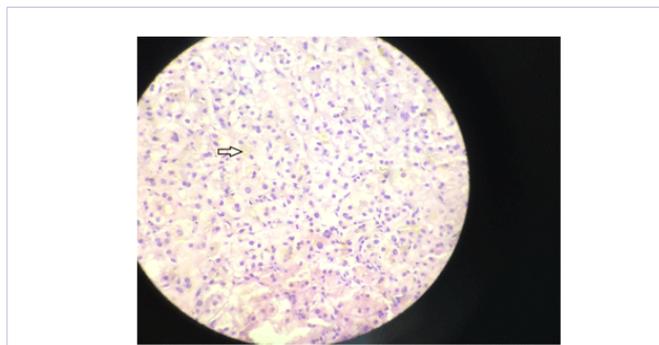


Figure 2: Liver biopsy. Arrow showing cholestasis without inflammatory cell (Bland cholestasis) 100 X magnification

Table 1: Trend of laboratory parameters during hospital stay and follow up

	On admission	1 st week	3 rd week	On discharge	Follow up
Total Bilirubin (mg%)	3.83	13	21.1	4.7	2.3
Direct Bilirubin (mg%)	3.16	8.61	12.6	2.2	1.99
AST(U/L)	172	36	66	46	37
ALT(U/L)	248	65	77	70	72
ALP(U/L)	214	279	261	304	185
Amylase (U/L)	360	372	782	136	
INR	1.00	1.00	1.00	1.1	1.00

AST- Aspartate Transaminase, ALT- Alanine transaminase, ALP- Alkaline phosphatase, INR- International normalised ratio

Discussion

Anabolic steroids with 17 alpha carbon substitutions have been associated with a variety of cholestatic injury with little hepatocellular injury. Cholestasis under these circumstances may be secondary to the binding of drugs to canalicular membrane transporters, accumulation of toxic bile acids from canalicular pump failure, or genetic defects in canalicular transport proteins. The US Food and Drug Administration (FDA) classified these compounds as class III controlled substances in 1990, limiting their use to specific indications such as replacement of male sex steroids in men who have androgen deficiency, treatment of certain rare forms of a plastic anemia, and the counteraction of catabolic states such as trauma or HIV wasting [3].

Recently the number of cases of anabolic steroids induced liver toxicity has increased considerably due to the rise in the sales of nutritional supplements containing steroid based prohormone. Most cases of anabolic steroids induced cholestasis are not caused by direct hepatocellular damage but by an impaired biliary secretion. Simultaneous occurrence of hepatitis and pancreatitis is seen very rarely. Electron microscopy of rat livers following 17 carbon substituted anabolic steroid administration confirmed canalicular changes of dilation and loss of microvilli [4]. Cholestatic effects have been attributed to interference with bile flow with potential sites of anabolic injury at the canalicular, peri-canalicular microfibrillar network and the basolateral plasma membrane all resulting in canalicular contraction . The steroid-like agent, icterogenin, also leads to cholestasis and

canalicular distortion, lending further support to this theory [5]. Steroids containing 17 alpha alkyl groups exhibit the greatest liver toxicity because of their slow metabolism. This side effect usually appears after 1-5 months of use. Drug-induced cholestasis can be of several varieties: bland, meaning that there is a limited injury to hepatocytes, inflammatory, sclerosing, or ductopenic (disappearance of bile ducts) [6]. Hepatic dysfunction often resolves quickly with the discontinuation of the anabolic steroid in anicteric cases and within months in patients presenting with icterus [7]. In patients without jaundice, a continuation of the offending agent has been noted to induce tolerance to the adverse effects of anabolic steroids with amelioration of hepatic enzymes levels [7]. There is no specific therapy for drug-induced liver injury and treatment is mainly supportive. Few have proposed the use of N-acetylcysteine in early liver failure [7]. Cholestyramine and ursodeoxycholic acid may decrease the pruritus. Rifampicin and naltrexone have been used for refractory pruritus. Albumin dialysis with the MARS system appears as a valuable therapeutic option for the management of anabolic steroids induced cholestasis not responding to medical therapy [8].

Our patient also had acute pancreatitis without any structural or metabolic cause. Exactly how anabolic steroids induce acute pancreatitis is unknown, but postulated mechanisms include immune-mediated inflammatory response, direct cellular toxicity, pancreatic ductal constriction, arteriolar thrombosis, and metabolic effects [9].

Simultaneous occurrence of both hepatitis and pancreatitis is very rare. Proper clinical history and drug history can alleviate the need for extensive work up. Proper education regarding the use and side effects of AAS might prevent such diseases.

Conflicts of interest

None to disclose.

Financial Disclosure

None to disclose.

Written informed consent obtained from the patient.

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