

ACUTE KIDNEY INJURY DUE TO ANABOLIC STEROIDS AND VITAMIN SUPPLEMENT ABUSE – SERIES OF 10 CASES IN FORTALEZA, CEARÁ, BRAZIL

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OBJECTIVES

Despite prohibition and drug screening by most international athletic organizations, anabolic steroids are still used to increase muscular mass and thus obtain the best results in sports competitions. The use of these substances has reached alarming proportions in the last decades and is now a public health problem. The aim of this study is to describe the occurrence of acute kidney injury (AKI) as a complication of the use of anabolic steroids and vitamin supplements.

METHODS

This is a case series of 10 patients with AKI due to anabolic steroids and vitamin supplement abuse admitted to the General Hospital of Fortaleza, Ceara, Brazil, in the period from January 2009 to July 2012. AKI was defined according to the RIFLE criteria. An evaluation of all clinical .

RESULTS

The patients reported the use of anabolic steroids and veterinarian vitamin supplements with vitamin A (20,000,000IU/dose), vitamin D (35,000,000IU/dose) and vitamin E (6,000IU/dose). The mean age was 23±7 years (range 16-34 years), and they were all male. The main clinical manifestations were fever (66.6%), nausea (88.8%), vomiting (77.7%), anorexia (44.4%), weight loss (44.4%), hypertension (33.3%), headache (33.3%), tachycardia (33.3%) and adynamia (44.4%). All patients had AKI, classified as “Injury” according to the RIFLE criteria. The mean time of hospital stay was 36±28 days. Laboratory tests at admission showed: Ur 70±17mg/dL, Cr 3.3±0.7mg/dL, Na 137±1.9, K 3.7±0.5, Hb 11.2±2.2g/dL, Ht 33.4±6.9%, white blood count 11340±5982/mm³, Platelets 376000±175893/mm³. The maximum levels of urea and creatinine were 120±85mg/dL and 5.3±3.0mg/dL, respectively, and calcium was 14±1.9mg/dL. Urinalysis showed proteinuria in 3 cases (33.3%) and hematuria in 1 case (11.1%). Hemodialysis was required for 2 patients (22.2%). Renal biopsy was done in 4 cases and showed inflammatory interstitial infiltrate, with eosinophils, calcium deposit in the interstitial space and acute tubular necrosis, without significant glomerular abnormalities.

Table 1. Clinical and laboratory characteristics of 10 patients with AKI associated to the use of anabolic steroids and vitamin supplements.

Patient	1	2	3	4	5	6	7	8	9	10
Age (years)	17	33	19	16	21	34	30	26	19	51
Ur max (mg/dL)	78.7	81	287	77	79	98	68	251	61	63
Cr max (mg/dL)	5.9	3.7	8.2	3.7	3.9	4.7	3.2	12.1	2.5	2.7
K max (mEq/L)	4.2	4.7	4.9	4	3.5	-	5.6	5.8	4.3	4.0
Ht max (%)	35.5	35.3	43.6	24.7	-	-	42.5	38.3	34.7	35.6
Hb max (g/dL)	12.1	11.9	14.7	13.8	-	-	14.2	12.6	12.5	11.5
Hb min (g/dL)	9.3	9.43	11.2	5.52	-	-	10.7	7.99	10.7	9.4
Leukocytes max (x1/mm ³)	23900	14100	12500	8640	-	-	15100	19100	11900	7550
Platelets max (x1/mm ³)	594000	403000	484000	456000	-	-	423000	804000	353000	430000
Platelets min (x1/mm ³)	26600	288000	279000	181000	-	-	258000	150000	20000	292000
Vitamin D	-	56.8	150	116.7	-	-	-	-	-	160
PTH	-	4.2	5.7	-	7.28	4.93	5.15	2.9	-	8.2
Cálcio total máx (mg/dl)	14.2	15.1	17.03	16.8	12.2	11.7	14	12	12.8	14.5
Total Calcium min (mg/dl)	10.9	12.6	9.9	7.9	-	11.6	9.6	7.7	9.5	9.6
Urinary Calcium (mg/day)	1615	251.3	-	757.9	552	228.6	390	234.5	-	-

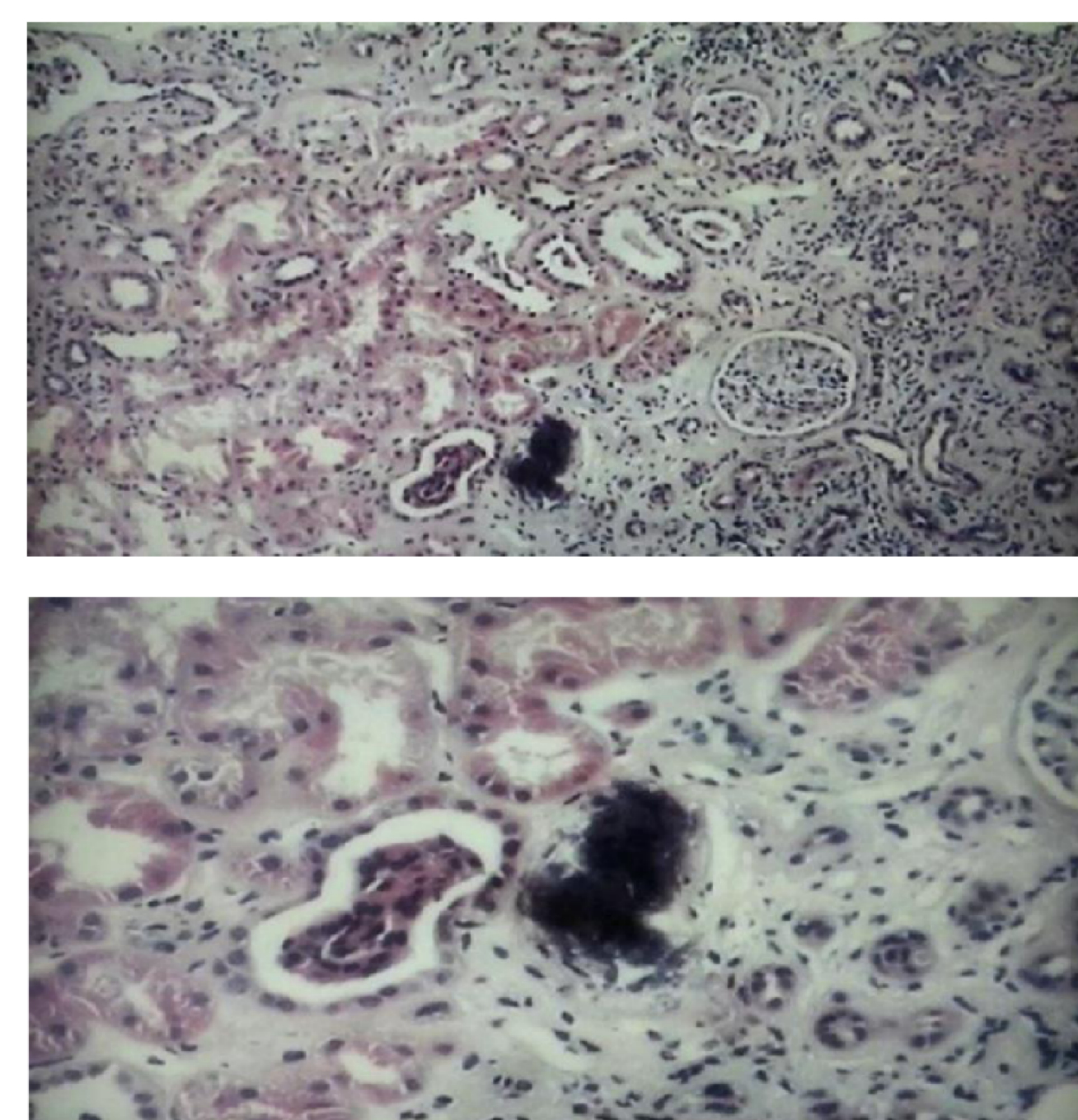


Figure 1. Kidney biopsy showing interstitial inflammatory infiltrate, with eosinophils, calcium deposits in the interstitial space and acute tubular necrosis.

CONCLUSION

AKI is an important complication of anabolic steroids and vitamin supplements abuse. The main cause of renal dysfunction in these cases seems to be the vitamin D intoxication and drug induced interstitial nephritis. Further studies are required to better understand the pathophysiology of this type of AKI.

REFERENCES

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