‘Gym Tonic’ and Quadriparesis

Himmatrao S Bawaskar1, Parag H Bawaskar2, Pramodini H Bawaskar1

Abstract
We report a case of acute onset quadriparesis which occurred after consumption of some drugs which were illicitly prescribed to our young patient by his gym instructor. The deadly concoction of so-called gym-thonic (Cyproheptadine and dexamethasone) led to hypokalaemic paralysis in our patient.

Introduction
Intensive and aggressive body-building by regular gym routines has become a passion in youngsters. Even educated people put their lives at risk by blindly surrendering to the demands and advice of sharks that run the fitness industry. It is easy to fall prey to the tactics employed by underqualified fitness or wellness coaches who lure potential clients with dubious weight-loss or weight-gain remedies. Often, the victims have to pay a heavy price for this, at times at the cost of their lives.

Case
A 33 years male reported with complaints of sudden onset weakness in all four limbs in the form of inability to stand from squatting position, inability to button his shirt or hold the tea cup since one day. On the previous day, he developed sudden onset weakness of all four limbs, which were total at onset and non-progressive. He was unable to stand up from the floor bed or walk without support. The weakness had not improved with the medications dispensed by his family physician. He denied any history of preceding febrile illness or vaccination. There was no history of similar episodes in the past. He informed us that, in order to gain weight, he had enrolled in a gym 13 months ago. But at that point he denied consumption of any herbal, ayurvedic or diuretic drugs. He admitted that he had gained 15 kilograms weight in the past year after enrolling in the gym. After repeated grilling about illicit drug intake, his wife revealed that he had been taking some medicines on the advice of his gym instructor for the past thirteen months. She was immediately advised by us to make the tablets available for scrutiny.

On examination of the young male, we recorded stable vital parameters except for tachypnoea. On nervous system examination, higher functions and cranial nerves were normal. We found MRC grade 3 power in distal muscle and grade 2 power in proximal muscles of both upper and lower limbs. Tendon reflexes were not elicited even with reinforcement. No sensory or autonomic abnormalities were detected.

His ECG showed heart rate of 70 beats per minute, prolonged QT interval (QTc= 504 ms), widened QRS complexes (0.12 seconds) and prominent U waves in anterior leads (Figure 1 A) Blood sugar was 112 mg/dl, Thyroid function was normal. Serum potassium levels were remarkably low i.e. 1.9 meq (normal 3.5 to 5.6 meq/dl). He was admitted in the intensive care unit and under cardiac monitoring, potassium chloride infusion in Mannitol was started by intravenous route. At the end of six hour of admission power in all limbs had returned to Grade 5. Serum potassium level was 3.9 mEq/dl. The electrocardiogram showed regression of U waves and normalization of QRS duration (0.10 seconds) (Figure 1B and 1C). By then, the offending tablets were made available and found to be containing Cyproheptadine 4 mg and Dexamethasone 0.5 mg (Figure 2). This was corroborated on the next day by the gymnasium trainer as well. The patient was counseled about avoidance of such quick-fix remedies in the future. On follow-up, he is found to be in good health without any residual weakness.

Discussion
Steroid induced hyperinsulinemia leads to an increased NA+/K+-ATPase pool in the skeletal muscle. This exacerbates hypokalemia by promoting the renal excretion of potassium, resulting in muscle weakness. Dexamethasone which doesn’t have minerocorticoid effects may cause paralysis by this method.1 At times hypokalemia may be the clue for diagnosis of chronic steroid consumption.2 Dexamethasone improves well being and appetite and redistribution of body fat result in Cushing syndrome. Weight gain in present case is because of excessive appetite stimulation by Cyproheptadine. Cyproheptadine is a H1 blocker. It directly inhibits potassium, sodium and N-type and L-type calcium channels in cardiac cells, result in hypokalemia and prolongation of QT interval3 (Figure A). Excessive sweating due to October heat and high carbohydrate diet could have contributed to hypokalemia in the present case.4 In the hypothalamus, serotonin stimulates ACTH. Cyproheptadine being a serotonin...

Fig. 1: ECG on admission (A) showing widened QRS duration and prominent U waves in V1-V6. ECGs (B and C) 6 hours and 24 hours respectively showing regression of U wave and reduction in widened QRS.
antagonist could have antagonized the dexamethasone action and prevented the development of Cushing’s syndrome in our patient.\(^3\)

**Conclusion**

Our case highlights the importance of rigorous and thorough history-taking for there-in lies the clues to diagnosis. This case should also serve an eye-opener for fitness-seekers who blindly entrust their health in the hands of unqualified ‘wellness coaches’.

**References**