**Case report**

**Digoxin Toxicity in Elderly Patient with Hyperthyroidism**

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**INTRODUCTION**

Digoxin is a class of digitalis glycosides, with its toxicity a well-known phenomenon due to its narrow therapeutic window. This case report highlights the issue in initiating digoxin in an elderly patient with Graves’ disease.

**CASE DESCRIPTION**

A 79 years old Female, underlying Graves’ disease on Tablet Carbimazole 5mg OD, was started on Tablet Digoxin 0.25mg OD two months ago for atrial fibrillation, presented with confusion, and vomiting in nursing home. She was compliance to medications but defaulted routine monitoring. Initial diagnosis of digoxin toxicity was made supported by bradycardia with pulse rate 30 beats/min, and ECG findings of Morbitz Type II Heart Block with reverse tick sign. Laboratory investigations revealed TDM Digoxin level of 8.14nmol/L exceeded therapeutic range, euthyroid picture in Thyroid Function Test (TFT), and acute kidney injury with Hyperkalaemia in Renal Profile. Patient was given 1 vial intravenous digoxin-specific antibody (DigiFab) equivalent to 40mg diluted in 50mls Normal Saline in Emergency Department, clinically improving and subsequently discharged well after 4 days admission to intensive care. TDM Digoxin was in therapeutic range prior discharge. Digoxin was stopped and patient was planned for TFT review after 2 weeks prior to restart anti-thyroid medication.

**DISCUSSION**

Digoxin therapeutically helping in atrial fibrillation by slowing cardiac AV node conduction and providing positive inotropic effect in enhancing cardiac contractile mechanism. However, chronic digoxin toxicity many result from prolonged half-life of digoxin caused by euthyroid state on antithyroid treatment, acute deteriorating renal function, dehydration, electrolyte disturbances and reduced lean body mass, especially in frail patients as case described above. In Graves’ disease, hyperthyroid state increases Digoxin kinetics in distribution volume and renal clearance. As patient achieved euthyroid state after on Carbimazole, dose reduction of Digoxin is recommended to prevent the risk of digoxin toxicity. DigiFab have contributed as antidote by rapidly binding and neutralising digoxin molecules in symptomatic digoxin toxicity, especially in life-threatening dysrhythmia.

**CONCLUSION**

Patients with hyperthyroidism on treatment, are more difficult to monitor appropriate digoxin levels, as physiologic changes easily affect digoxin interaction. Both clinical judgement and routine laboratory monitoring of TFT and serum digoxin, are important in recognising digoxin toxicity in patient.

**KEYWORDS:** Digoxin toxicity, Hyperthyroidism