

**THE EFFECT OF AMIODARONE ON THE  
THYROID**

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An antiarrhythmic drug, amiodarone, contains 37% iodine by weight and is structurally similar to the thyroid hormones. The drug inhibits 5'-deiodinase, resulting in increases in serum thyroxine and "reverse" triiodothyronine, whereas the concentration of triiodothyronine in serum is decreased (Kennedy et al. 1989).

The study involved determining:

- a) the total quantities of amiodarone hydrochloride tablets and injections imported for the time interval (1988 - 1990). This data was collected from the records kept in the Drug Data and Statistics unit at the Port Medical Office.
- b) the consumption of amiodarone hydrochloride tablets in community pharmacies for the stated time interval. A questionnaire was circulated to 120 community pharmacists who are presently managing a pharmacy. A total of 56 pharmacists completed and returned the questionnaire.
- c) the consumption of amiodarone hydrochloride in State Pharmacies during the same time interval. The data was obtained from the stock cards at the Formulary 1 and Formulary 2 stores at the Medical Stores.

Other aims of the study were:

- d) to discuss the relationship between the thyroidal effects of short-term amiodarone therapy and its mechanism
- e) to compare thyroid function tests of subjects on amiodarone therapy with those from a cardiac control group

The following represent some of the more important results:

- a) National Import  
An increase in the import of amiodarone tablets and injections over the three year interval studied. This may suggest three possibilities:
  - i) a net increase in amiodarone per patient with a cardiac disorder
  - ii) an increase in dosage per patient
  - iii) a greater demand for the anti-arrhythmic drug

b) Consumption in Community Pharmacies

- i) 62.50% (n=35) of the pharmacists stated that they did not stock amiodarone during the time interval 1988 - 1990
- ii) Out of the 30.36% (n=17) of the pharmacists that stocked amiodarone:
  - 19.64% (n=11) dispensed an average of four boxes during 1988
  - 26.79% (n=15) dispensed an average of four boxes during 1989
  - 21.43% (n=12) dispensed an average of six boxes during 1990
  - 7.14% (n=4) kept no records.
- iii) The data suggested that most community pharmacists did not stock the drug because it is very expensive and they had not been specifically requested by patients to dispense it.

c) Consumption in State Pharmacies

- i) 200mg Cordarone tablets 80,100 121,950 114,000
- ii) 0.15mg/3mL Cordarone injections 745 1290 1130
- i) There was an increment of 52.2% over the first year interval which was followed by a slight decline of 6.17%. It is difficult to determine whether the increase is due to an increased number of patients presenting at hospital with arrhythmias refractory to other drug therapy, or misuse or abuse of this medicine by patients with a cardiac disorder.
- ii) The values obtained also fluctuated over the time period studied. The increase in ratio (1 to 1.10) of injections to tablets could be attributed to the fact that an increased number of patients presented at hospital with cardiac disorders requiring i.v. amiodarone therapy.
- d) Levels of thyroid hormones (mean  $\pm$  SEM) in patients on amiodarone therapy.

	after start of treatment	after 21 days
FT4, pmol/L	18.5 $\pm$ 1.6	24.9 $\pm$ 0.6
FT3, pmol/L	2.4 $\pm$ 0.4	3.7 $\pm$ 0.4
TSH, mU/L	2.3 $\pm$ 0.2	3.6 $\pm$ 0.3

From this study it can be concluded that Cordarone is widely used in Malta and its use is on the increase. It is the role of physicians and pharmacists to ensure that this increased consumption is justified by correct prescribing, dispensing and use.

Changes in thyroid function tests are almost invariably found in amiodarone-treated subjects compared to cardiac controls. However, these changes do not indicate thyroid dysfunction and should not detract from the use of amiodarone when it is clinically indicated.

#### Reference

Kennedy R., Griffiths H., Gray T.A. Amiodarone and the Thyroid. *Clinical Chemistry* 1989; 35: 1882 - 1887