INTRODUCTION

- Digoxin, as a treatment option in cardiology, is limited by its narrow therapeutic index.
- Current European Society of Cardiology (ESC) guidelines provide a Class 1 Level of Evidence B recommendation for digoxin in atrial fibrillation, and classify it as a treatment of uncertain benefit in heart failure.¹
- Clinical guidelines recommend targeting a serum digoxin concentration (SDC) between 0.5 and 0.9 ng/ml, or <1.0 ng/ml.¹,²,³

AIMS

- To determine the number of patients on digoxin in Malta
- To analyse SDCs recorded at Mater Dei Hospital (MDH)
- To determine adherence to the clinically recommended target SDC
- To assess queries concerning digoxin processed by the Drug Information Unit (DIU) at MDH

METHOD

Number of digoxin-treated patients

- Government pharmaceutical dispensing data for November 2016 to February 2017 was analysed and the number of patients receiving digoxin and the mean daily dose were determined.

Retrospective analysis of SDCs

- Data for SDCs recorded at the MDH Pathology Laboratory from January 2008 to December 2016 was collected.
- Patient variables selected for inclusion in the analyses were: SDC value, gender, age, origin of SDC request, referring physician and number of SDCs requested.

The SDC values collected were compared to the SDC target range recommended by the ESC guidelines (0.5 to 0.9 ng/ml) and classified as below, within and above the target range.¹

Requests for information at the DIU

- All enquiries processed by the DIU between April 2002 and December 2014 were collected and requests concerning digoxin were classified according to the reason for the query.
- The data was analysed using the JASP (Version 0.7.5.6) statistical package. Descriptive statistics and a comparison of means via the Student’s t-test were carried out.

RESULTS

- In March 2017, 2,059 patients were receiving digoxin treatment via the government pharmaceutical system in Malta. Mean daily dose was 0.13 mg (range 0.03 –0.25 mg).
- A total of 17,388 valid SDCs from 5,653 patients (61% female, 39% male, mean age 78±11 years, range 1-111 years) were analysed.
- Mean number of SDCs per patient was 3 (range 1-47). Mean SDC was 1.30 ±0.99 ng/ml (range <0.1-2.0 ng/ml), with 32% of SDCs within the recommended range (Fig. 1).
- Eight-five percent of SDC requests originated from MDH, with 43% of these from the A&E (mean 1.17±1.01 ng/ml).
- Of the 14,369 queries processed by the DIU, 91 (0.6%) concerned digoxin. The top three enquiries were related to administration (26%), interactions (15%) and dosing (15%).

CONCLUSION

The mean SDC of 1.30 ng/ml is above the upper limit for the clinically recommended target. The number of queries regarding digoxin is low (0.6%) compared to the number of out-of-range SDCs (68%), indicating the need for the DIU to disseminate its services. Further research is warranted to investigate the clinical implications of these signals.

References