URINE C-PEPTIDE:CREATININE RATIO (UCPCR)

1. INTRODUCTION

1.1 Purpose of the Procedure

The purpose of this document is to provide information on the processes that should be followed for analysis of a urine C-peptide:creatinine ratio, and guidance on the interpretation of results.

1.2 Staff

This applies to all Clinical Scientists in the Duty Biochemist role.

1.3 Related Documents

BS/SR38 Sendaway Test Information - location, storage and transport requirements
BS/CB/DCB/EN/8 Insulin and C-peptide requesting and interpretation

1.4 References

N/A

2. PRINCIPLES OF THE PROCEDURE

2.1 Clinical Use of urine C-peptide:creatinine ratio

Urine C-peptide creatinine ratio (UCPCR) is mainly to be used in patients on insulin treatment, to assess endogenous insulin secretion. Its role in patients not on insulin is limited. If the result of UCPCR is out of keeping with other clinical findings then a repeat test is recommended, especially if the result is unexpectedly low. Patients with a high endogenous secretion >25th centile are likely be those that benefit most from metformin/other oral agents.

Most of the studies have been performed in patients with normal renal function (eGFR >60 mL/min/1.73 m^2) but it has been validated in patients with Type 2 diabetes with moderate renal impairment (eGFR 30-60 mL/min/1.73 m^2). The test is unlikely to be appropriate in patients with severe renal impairment.

2.2 Sample requirements

- The patient should collect a urine sample 2 hours after eating the largest meal of the day, having emptied their bladder before eating (see patient information in Appendix 1).
- Urine should be collected in boric acid container (MSU pot). Note if sample is collected into a plain container and received within 24 hours, it can be transferred into a boric acid

container, frozen and sent for analysis. If received in a plain container >24 hours after collection, the sample will be rejected.

- Samples should be labelled with the patient's name, date of birth, and NHS number, and the date of time of sample collection.
- Samples are stable for 3 days at room temperature.

2.3 Requesting urine C-peptide:creatinine ratio

- Sample test code for requesting: UCP
- Target TAT for reporting: 1 week
- Samples should be posted on the same day of collection via the local laboratory to: Department of Clinical Biochemistry, Level 8, Bristol Royal Infirmary, Marlborough Street, Bristol, BS2 8HW

2.4 Interpreting urine c-peptide:creatinine ratio results

Interpretation of urine C-peptide:creatinine ratio for investigation of patients with established Diabetes mellitus (>3 years since onset):

- >0.6 nmol/mmol Substantial insulin secretion, associated with type 2 DM and MODY and absence of absolute insulin requirement
- 0.2-0.6 nmol/mmol Intermediate insulin secretion
- <0.2 nmol/mmol Severe insulin deficiency, managed as type 1 DM

Appendix 1: Patient information

INSTRUCTIONS FOR THE COLLECTION OF URINE SAMPLE FOR URINE C-PEPTIDE: CREATININE RATIO (UCPCR) ANALYSIS

1. Please pass urine just before your biggest meal of the day and discard.
2. Eat your meal as usual with a glass or more of water.
3. Do not eat or drink anything else for the next 2 hours unless you have a hypoglycaemic attack ('go hypo'), in which case you should do this test on another day.
4. Do not pass urine until 2 hours after this meal.
5. **2 hours after this meal, please go to the toilet and pass some urine into the pot with the red top provided.** Screw the lid on securely.
6. Write the date and time the sample was collected on the bottle.