Type 2 Diabetes

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James talks to Professor Ian Caterson about the management of Type 2 diabetes blood sugar issues that may confront the junior doctor working on the wards.

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About Ian Caterson

Professor Ian Caterson is currently Foundation Director of the Boden Institute of Obesity Nutrition Exercise and Eating Disorders and Boden Professor of Human Nutrition at the University of Sydney. He has held the latter position since 1997. Prior to that Ian was Senior Staff Specialist and Director of Clinical Endocrinology at Royal Prince Alfred Hospital.

He has been president of both the Australian Diabetes Society and the Australasian Society for the Study of Obesity and is president-elect of the World Obesity Federation.

Ian is a recognised expert on obesity, its causes, prevention and management. He is on the Clinical Care group of World Obesity, chairs the Expert Obesity Committee for the Australian National Preventive Health Agency, and is on the Prevention and Community Health Committee of the NHMRC of Australia.

Type 2 Diabetes

With Professor Ian Caterson, Endocrinologist at Royal Prince Alfred Hospital, New South Wales, Australia

Introduction

Type 2 Diabetes could be said to represent an evolving epidemic. In this podcast, Professor Caterson will discuss some blood sugar management issues that may confront the junior doctor.

Case

You are called about a 65-year-old patient with a known history of diabetes who has been admitted following a fall at home. The patient has a BSL of 26 mmol/L, and the nurse asks you for an order for insulin over the phone.

– 1. Initial approach over the phone?

- In a patient with known diabetes you need to ensure that the patient has had their oral hypoglycaemics and is on the correct diabetic diet. At 26 it is acceptable to adjust her BSL management over the next few days and bring it down slowly. The patient does not need an acute drop in blood sugar (especially at age 65).
- Factors that should make you see the patient immediately are:
    - A young person with a new diagnosis, especially if the sugars are high (35-40) and there are ketones.
    - An elderly person, dehydrated, with a really high BSL – thinking about hyperosmolar non-ketotic coma.

2. When you review the patient you find that the patient has known Type 2 diabetes, normally controlled with metformin and gliclazide. However, these medications were not given in the emergency department due to concerns about dehydration. The patient does not normally take her sugars at home and does not know what they usually are. She has had Type 2 diabetes for 8 years which is normally managed by her GP.

- **History:**
    - In this woman you are interested in the overall control of her diabetes – the simplest way of doing so is to get a glycated haemoglobin (HbA1c).
    - In this woman, with diabetes for 8 years, you also want to know if she has any diabetic complications.
        - Kidneys
        - Blood pressure
        - Heart
        - Eyes

3. Are there any investigations that you would routinely do?

- HbA1c
- Renal function, electrolytes
- This patient doesn't require a blood gas – there's no real indication for it.
    - Blood gas would be to assess for pH, and it is very unusual to get a ketoacidosis in type 2 diabetes. This lady is also very unlikely to have HONC with a blood sugar of 26.
    - However, with the new SGLT2 inhibitors (which this patient is not on), such as empagliflozin (trade name Jardiance), which allow patients to keep passing glucose in the urine there have been reports of ketoacidosis.

4. In the management of this patient, who has now been on the ward for several days now with high blood sugars, is there a role for insulin?

- It depends. If the patient is eating well and is taking her medications you would look towards adjusting her oral medications and what she is eating.
    - When the patient gets home, she will return to her normal eating pattern, be more active and hopefully the sugars should improve.
    - In inpatients, we try to get the sugars to the range of 5-12 in order to avoid hypoglycaemia but also to avoid dehydration and other problems associated with hyperglycaemia.
    - Especially in elderly people, hypoglycaemia is the major complication we are trying to avoid. It happens quite regularly as people are often given medications, then made nil by mouth and particularly with the sulfonylureas this can result in hypoglycaemia.
- If the sugar is persistently in the 20s range you might consider adding a basal insulin.

5. What are some of the common causes of high sugars on the ward?

- Infection
- Lack of medication
- Progression of diabetes – diabetes is a progressive disease and it does get worse year by year. Ultimately if you've had diabetes for more than 10 years, insulin is hovering in your future.
- Steroid treatment

6. After being placed on appropriate treatment this woman is made nil by mouth for an orthopaedic procedure, what changes to her oral hypoglycaemic agents would you make?

- Because sulfonylureas can cause hypoglycaemia we cease them on the morning of the operation.
- Due to potential issues with metformin it should be stopped 24 hours before surgery.
- At this point it is also appropriate to:
    - Inform the anaesthetist – they will take special precautions including IV fluids containing sugars and usually an early spot on this list (even if

they are not on insulin).
    - Arrange fluids overnight if the patient is unable to have their evening meal, or those treated with insulin.

7. What are the indications for requesting the endocrinology team involvement with the management of a ward patient's diabetes?

- The indications are:
    - If you feel that the sugars are inappropriately high, or,
    - If the glycated haemoglobin level is high (>9 usually).
- If you do involve the endocrinologists, make sure you note it in the discharge so that the GP is aware of it.

Take home message

- Diabetes is incredibly common; you need to feel confident that you are looking after average diabetic patients appropriately.

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