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Case study

Integrative care of type 2 diabetes mellitus

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ABSTRACT

Integrative care of patients with type 2 diabetes requires an understanding of the patient's lifestyle, motivations and natural history of their diabetes. This individualised approach integrating elements of the medical framework and evidence based lifestyle, nutritional and other complementary approaches can assist patient outcomes.

CASE

Judy is 52 years old with diabetes of 7 years duration – she is on metformin XR 1 g bd and gliclazide 120 mg mane, HbA 1c = 7.9% (63 mmol/mol), total cholesterol 5.2, TG 2.4, HDL 1.01, LDL 3.22, WT is 93 kg, Ht = 170 cm, BMI = 32.2, BP 145/85.
She has had no known cardiovascular disease.

She is new to your practice and wishes to discuss:

Patient question

What can she do to assist her diabetes without having to change her medications?

ANSWER

Assisting a person like Judy with type 2 diabetes with weight loss and addressing other lifestyle issues is to be actively encouraged. This is important not just at diagnosis, but when advising the person with type 2 diabetes throughout the course of the illness and certainly before potential escalation of medical therapies. Based upon her motivation to seek a change – Judy is a good candidate to proceed with goal oriented lifestyle planning as she states she is ready.

Patient question

Judy wants to lose weight and has heard of different diets for diabetes including a high protein low carbohydrate diet to help her lose weight like her neighbour Joan. She is motivated to engage in this with a local dietician.

ANSWER

Dietary advice should be tailored to the dietary preferences and cultural settings confluent with the individual patient with best evidence showing structured meals or meal replacements work best in assisting weight management. The style of eating – be it the Mediterranean, low fat, high protein, low carbohydrate, Palaeolithic, etc., is less important than overall calorie restriction in achieving weight loss. Aiming for a reduction of (2500 kJ) 600 kcal/day is necessary to reduce weight.

Physical activity combined with calorie restriction improves not only parameters of well-being and prevention of major morbidity but also embeds longer term weight maintenance. If weight loss is to be achieved, major increases in daily activity need to be commenced, with at least 60 min of moderate-intensity physical activity (such as brisk walking) every day being required.

You explain to Judy that a structured programme, with support from a dietician and exercise specialist would be a good starting point. You explain that people with diabetes embarking on these support programmes seem to do better than those that don't. Because of the intensive nature of this programme you review her feet and advise her to include her podiatrist in this programme so her feet and choice of shoes are looked after. You also advise her

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that if she develops any unexpected chest pain, unusual breathlessness or odd palpitations that she must stop the exercise and make an urgent appointment or go straight to hospital.

You help her understand some goals by quoting "Sustained weight reduction of approximately 5 kg is associated with a reduction in HbA 1c of approximately 0.5–1%." And that even weight loss of 2–3 kg achieved can result in a positive reduction in her blood pressure of around 4–5 mmHg systolic and 2.5–3.5 mmHg of diastolic.

Patient question

Judy has been refusing to take statin medication and wants to take Fish oils. What advice do you give her about Fish Oils and diabetes and her lipids?

ANSWER

You explain that oils from fish such as salmon, sardines and tuna are essentially the omega 3 fish oils she describes. Certainly taking them as a supplement, rather than as food has not been definitely shown to prevent cardiac disease. There may be better evidence should she develop heart disease, but as this is not the case, you would not recommend supplementation now. You also explain that the fish oils do not alter her glucose control. However, if she increased her intake of oat brans containing betaglucan she may get a 5–10% reduction in her total cholesterol.

At this point you explain to her that her risks of cardiac disease can be calculated with a "risk calculator" – explaining that the number generated shows the possibility of a cardiac event in the next 10 years.

Using different risk calculators (A and B) her 10 year cardiovascular risk is moderate, between 8% and 11%.

(A) http://www.mdcalc.com/framingham-coronary-heart-disease-risk-score-si-units/
(B) http://www.cvdcheck.org.au

You explain to her that she has a 90% chance of not developing heart disease over the next 10 years but this risk is higher than you'd like. So, in encouraging her lifestyle programme, you explain you will keep monitoring this risk to see if there is a positive change within the next 6 months. If the needs arise, you encourage her to be open to considering medications that might assist her then. You explain that there is no evidence that aspirin will help prevent any coronary disease at this stage. You explain that of all the risks, elevated cholesterol is the most important to control, then BP and then glucose control in that order.

Judy asks about chromium and cinnamon to help her diabetes – what advice can you give her about these?

You advise her that there is limited evidence to support cinnamon in helping manage her diabetes, and the evidence for chromium needs further work before you could recommend it for her. The best advice is to spend some money on her new health and lifestyle programme.

Lastly she has stated she has some numbness in her toes – on examination there are signs of a classical symmetrical peripheral neuropathy. Her dorsalis pedis pulses remain intact – she wishes to know if there are any "natural therapies" that may assist her.

Examination is important to exclude large vessel causes of diabetic foot disease as much as microvascular disease, such as peripheral neuropathy. You explain that this may be a result of her longer standing diabetes and emphasizes the need for podiatry assessment and review. However, you also note she has been on metformin for some years, so you advise her to have a Vitamin B12 level taken, as lowered B12 can accompany longer term metformin use and also combinations of such with proton pump inhibitors.

While waiting for the B12 levels to return, you research diabetic peripheral neuropathy and find that intravenous alpha lipoic acid at 300–600 mg a day may improve some of the symptoms.

In return you explain her B12 levels are lowered and you would like to give her some methylcobalamin either orally 1500 μg/day or by muscular injection as an initial trial. You explain that if there is no improvement there may be additional therapies like the alpha lipoic acid that are available to her as well as medications that may assist if pain becomes an issue. Lastly, you explain that the better she maintains glucose control the better the nerves in her feet may have a chance for recovery.

SUMMARY

Judy is motivated to commence a lifestyle programme that needs co-ordinated and supportive care. Giving supportive and accurate advice will assist her focus on the most important aspects of her goals as well as support her wish to trial more 'natural' approaches. Team based care using allied health professionals has been shown to improve outcomes in type 2 diabetes [37]. Weight management, however complex, has many myths associated with it and it is worth reading the Casazza et al. article [2] before advising patients. Combining approaches using the best evidence will assist Judy, and at times this may span pharmacotherapeutic approaches (which have many guidelines [19,20] to assist practitioners but is not the focus of this case study) and lifestyle as an integrative model of care.

EXPLANATION AND EVIDENCE

DIET

Dietary advice should be tailored to the dietary preferences and cultural settings confluent with the individual patient. Recent research such as the LOOK AHEAD [1] study and reviews published by Casazza et al. [2], confirmed the use of structured meals and meal replacements having greater success in weight loss.

Reviewing recent published data on different styles of diet – high protein, Palaeolithic, low carbohydrate, low fat, low glycaemic index or Mediterranean diets [3–7], all these styles of diets perform in short term studies in reduction of glycaemic measurement by HbA 1c, so that recent evidence shows that it is not necessarily the 'style' of eating so much, with concepts of variety, and balance being less important than if eating achieves overall calorie restriction [2,3,5]. That being said, a low glycaemic index diet appears to have specific ability to achieve better glycaemic effect without increasing hypoglycaemia in type 2 diabetes [6]. Dietary interventions for weight loss should be calculated to produce a 600 kcal/day (2500 kJ) energy deficit [8].

How much weight loss is needed?

Sustained weight reduction of approximately 5 kg is associated with a reduction in HbA 1c of approximately 0.5–1% [8].

In adults with a BMI < 35 kg/m$_2$ or with prediabetes or hypertension, weight loss of at least 2–3 kg achieved with lifestyle interventions may result in a clinically meaningful reduction in systolic blood pressure [8]. On average, a 4.5 mm systolic and a 3–3.5 mm diastolic reductions.