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Type 2 Diabetes Mellitus with Oral Abscess and Obesity I

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CASE REPORT

A 62-year-old female, Mrs. L, was internally referred to the general clinic from the dentist clinic within *Puskesmas* Nusa Penida I with a diagnosis of dental abscess in the first right molar. The patient was experiencing pulsating pain and swelling of the upper right side of her jaw, with the pain radiating through to her right ear for the last two days. She sensed a rotting smell coming out of her mouth, had a fever, and a general headache throughout. Two weeks beforehand, the patient complained of her upper teeth being sensitive, feeling shooting pain whenever she was eating something hot or cold. This pain radiated to her upper jaw.

The patient has never been checked for her blood glucose level and was never diagnosed with diabetes. She denied any symptoms of frequent urination, excessive thirst, or excessive eating. However, her general diet consists of at least four large meals a day with a dominance of rice in every meal. She denied experiencing unusual fatigue. However, she admits to having tingling sensations in her fingers and toes at times. Her vision started to become blurry since a year ago. She denied having a family history of diabetes or any other remarkable disease.

Mrs. L runs an eatery with the help of household assistants, having little physical activity throughout the day. She usually sleeps early at 7 pm and wakes up at 3 am to start preparations for her eatery. Her unawareness of diabetes itself resulted in her paying no attention to her diet and lifestyle. She is an active smoker. She is of Javanese ethnic group.

On physical examination, the patients' blood pressure was 140/90 mmHg, heart rate of 90 times per minute, respiration rate of 18 times per minute, temperature of 37.5°C. Her height was 155 cm and her weight 75 kg, making her Body Mass Index (BMI) 31.2, which is categorized as obesity class I. Her fasting plasma glucose (FPG) was 400mg/dl.

Biological Diagnosis and Psychosocial Diagnosis

Biological diagnosis of diabetes type 2 and obesity class I with dental abscess. A holistic diagnosis was formulated as the patient having a major complaint of swelling of the right inner cheek with pain radiating from her upper jaw towards the right ear, she is worried that her condition would worsen and wishes that her pain can be relieved and her condition controlled in order to carry out her normal daily activities. The patient is considered as an elderly overweight lady, with uncontrolled diet with little physical activity and an active smoker.

Diagnosis was made based on patients' history, physical and lab examination, which was conducted both at the *puskesmas* and during home visits. Though she denied any classical symptoms of diabetes, a FPG of 400 mg/dl and risk factors of being obese, with uncontrolled diet and physical activity leads to the diagnosis of diabetes type 2.

On psychosocial diagnosis, the patient is deeply concerned that the infection in her mouth may worsen and infiltrate the membrane of the brain, which may lead to death, as warned by the dentist. She has no prior awareness or knowledge of diabetes, referring to only her awareness that wounds and illnesses will take longer to heal in the presence of diabetes. The patient has an unbalanced diet with having sometimes at least four meals in a day with a dominance of rice, and consuming little fruits and vegetables. She lives with her husband, while her two children are married and live in Denpasar. On home visit, it can be recognized that the patient does not adopt a clean and healthy lifestyle.

FORMULATION OF THE PROBLEM

The problem in this case is multidimensional, not only the clinical aspect of the multimorbidity of diabetes type 2, obesity, and dental abscess, but also the psychosocial aspect of the patient which determines her ability to self-manage her disease. Diabetes is a complex problem which relies heavily on the patients' ability to self-manage their condition. This includes taking medications as prescribed,

controlling their diet, and getting enough physical activity. These actions are then also influenced by the holistic well-being of the patient themselves. As a long-term, chronic disease, diabetes will influence all aspects of the patients' daily lives. It is then also inevitable that a patient with diabetes will have other concurring conditions throughout their lives, such as in this particular case. The primary care physician as the first point of care for the patient plays a major role in formulating a care plan that both meet the overall needs of the patient and is coordinated between the different health professions that may be involved. Such is the condition in this case, whereby the patient has little understanding of diabetes itself, and her condition requires the expertise of other health care professionals (dentist, dietician, and nurse). Not only does her condition need to be addressed clinically through medications and dental procedure, she also needs to be empowered to be able to actively participate in the management of her condition.

DISCUSSION

Patient centeredness is a principle of family medicine/primary care whereby the primary care physician in dealing with patients and problems, must regard the context of the patients' circumstances in order to provide a continued and coordinated care that is determined by the needs of the patient¹. In the case of chronic disease such as diabetes, the patient is burdened by a condition that occurs in complex interdependencies that continue across the lifespan. They are highly influenced by non clinical factors such as socioeconomic status, education, employment, and environment². It is then crucial for the primary care physician to manage the care of the patient both clinically and psychosocially, with great consideration towards the patients' social circumstances.

The patient in this case has never been diagnosed of diabetes, and she is not aware of its risks and complications. This highly influences the manner in which the primary care physician addresses the management of her diabetes. The four pillars of diabetes management consist of education, medical nutrition therapy, physical exercise, and pharmacological treatment³. The family physician needs to consider the patients' circumstances in each of these aspects of care given.

Education

Education of the diabetic patient holds a purpose to empower the patient to be able to self-manage their disease. Traditionally, patient education was generally prescriptive, a one-way communication whereby the information given to patients were based on therapeutic goals set by the physician. Education was designed to promote compliance utilizing strategies of both motivational and behavioral to necessitate change in patients. Such approach in education were found to be ineffective in diabetes^{4,5,6}. In order for education to be effective, it needs to be delivered in a way that it empowers the patient to discover and develop the capacity to be responsible for their own lives⁷. Although the primary care physician understands and is the expert on diabetes care in a doctor-patient interaction, it is ultimately the patients themselves, as experts on their own lives, which hold the biggest role in the control of the daily

management of their diabetes. To make the care of diabetes become an equal collaboration between the primary care physician and the patient, the patient need education that are designed to promote the culture of informed decision making.

This education is given by a doctor when the diagnosis of DM is established as well as when the patient is in control of the polyclinic or by a health promotion officer who provides specific counseling. Educating patients about healthy living behaviors includes following a healthy diet, increasing physical activities, using diabetes drugs and medications in special conditions safely and regularly, monitoring blood glucose, having the ability to recognize and deal with acute illness conditions appropriately, having simple problem-solving skills, and counseling to join a group of diabetics managed by the puskesmas prolanis program, are able to utilize existing health care facilities, namely by always carrying out routine checks to the puskesmas and when acute complaints arise so that they are immediately examined. Prolanis activities refer to the patient centered care approach which makes the needs of patients prioritized in managing diabetes⁸.

Educational materials at the initial level are material about the course of diabetes disease, the meaning and need for continuous diabetes control and monitoring, complicating diabetes and the risks, pharmacological and nonpharmacological interventions and treatment targets, interactions between food intake, physical activity, and oral hypoglycemic drugs or insulin and other drugs, how to monitor blood glucose and understanding the results of blood or urine glucose, overcoming temporary emergencies such as pain, or hypoglycemia, and the importance of regular physical exercise.

Medical Nutrition Therapy

When a diagnosis is made or at a certain time it is considered necessary to emphasize the management of a diabetic diet to patients, nutrition officers provide counseling and education about the management of the patient's diet that is applied at home. From the results of nutritional assessment by nutrition officers the following results were obtained: weight = 75 kg, height = 155 cm, BMI = 31.2 kg/m² (Obesity I).

Calculate energy requirements in JMP patients:

Using the Brocca formula can be determined Ideal Weight (BBI) = (Height - 100) x 1 kg = 55 kg.

Basal Energy = BBI x 25 kcal/kg BB = 55 x 25 = 1,375 calories

Correction of 65 years old reduces 10% = -137.5 calories

Correction of mild activity added 20% = +275 calories

Correction of fat nutritional status = -20% = -275 calories

So the need for energy = 1.375-137.5 + 275-275 = 1,237.5 calories.

The division of the composition of energy nutrients a day

is no different from a balanced diet of normal Indonesian people, namely 60-70% carbohydrates, 10-15% protein, 20-25% fat.

The patient is educated that the selection of daily food items is not known to be prohibited. In principle, the type of food for people with DM is the same as for healthy people, except that there are several types of food that need to be limited, for example, the use of simple sugars including sugar, vegetables with high energy content, a source of protein containing high cholesterol, a source of fat containing fatty acids saturation, use of milk and so on.

The use of carbohydrates still follows a balanced diet in healthy people, namely 60-70%. More complex carbohydrates, but less / reduce simple carbohydrate intake. Fructose from fruits and honey is still better than complex carbohydrates such as rice, corn, noodles, and potatoes. Sugar is still allowed a maximum of 5% of energy needs a day. Fructose from fruits raises blood sugar levels lower than sugar and flour. The maximum dose is 20% of total energy. A sweetener made from fructose is good for people with DM, it's just that it should not be more than 20% of energy needs, because it has detrimental effects in the form of cholesterol, LDL, uric acid, etc. Fructose from natural fruit is very safe. Non-nutritious sweetener saccharin,

aspartame, acesulfame K (limit in DM patients)³.

Use of protein is 10-15% of total energy needs. Fat is consumed by 20-25% of total energy needs. 25% total fat, SFA (saturated fat) < 7%, MUFA (monounsaturated fat) < 10%, PUFA (polyunsaturated fat) < 10%, cholesterol < 250 mg/day.

The fiber of vegetables and fruits can reduce lipid/blood fat and blood sugar (fiber recommended 20-30 g/day) ± 25 g/day. Water-soluble fibers: pectin and gum (oats, cantel, nuts, vegetables, fruit, tempe). Water-insoluble fiber: cellulose, lignin, hemicellulose (bran, brown rice, cereals, nuts, fruits, old vegetables, oats, tempe). Salt in patients is recommended at 2400 mg/day.

Food is divided into 3 large portions, namely breakfast (20%), afternoon (30%), and evening (25%), and 2-3 small portions for interlude food (10-15% each), which is breakfast = 211 calories, lunch = 317 calories, dinner = 265 calories and snacks at intervals of 105 calories and 159 calories, respectively.

Physical Exercise

The patient is educated that physical activities are one of the pillars of controlling type 2 diabetes. Daily activities

Table 1. Sample menu a day

Morning	Noon	Night
White bread with peanut butter	Rice	Rice
Boiled eggs	Meat stew	<i>Pepes</i> fish
Lettuce/tomato salad	Fried <i>tempe</i>	<i>Cah tahu</i>
	<i>Pecel</i>	Sauteed kale
	Orange	Apple
10 a.m (snack)	4 p.m (snack)	9 p.m (snack)
Apple	Papaya pudding	Crackers or fruit

such as walking to the market, using stairs, gardening, must be carried out regularly and physical exercise (3-4 times a week for approximately 30 minutes). Physical exercise is recommended in the form of aerobic physical exercises such as walking, cycling, jogging, and swimming. The patient is asked to avoid habits of life that are less mobile or lazy.

Pharmacological Management

Pharmacological management of the patient Mrs. L, among others, was given metronidazole 500 mg 3 times a day, glibenclamide 5 mg once a day in the morning and metformin 500 mg twice a day, morning and night. Whereas for dizziness complaints given paracetamol 500 mg. The prescription is given by the polyclinic doctor and patients redeem it at the puskesmas pharmacy unit. Given the drug combination because the use of metformin alone in the previous treatment did not adequately control blood sugar⁹.

When in a pharmacy unit, a pharmacist or assistant pharmacist or other officers in charge of the pharmacy unit provides the appropriate medication prescribed by the doctor and provides an explanation of how to take the drug and the possible side effects. Glibenclamide

is educated to take 30-15 minutes before breakfast and metformin are taken together or after breakfast. It is also educated about the side effects of glibenclamide which can cause hypoglycemia and remind you of the signs of hypoglycemia that have been explained by the doctor along with first aid and further help.

Multimorbidity is now the norm for chronic, long-term conditions, such as diabetes. It is almost certain that a patient with a chronic condition will have at least another condition, be it chronic or acute in nature¹⁰. With diabetes, other morbidities that occur alongside it may be the result of the changing physiological function of the body itself due to diabetes itself, or it may be independent in its own pathological process. In the case of dental abscess occurring in a patient with diabetes, it has been investigated that both type 1 and type 2 diabetes increase the risk and severity of periodontitis, which may lead to abscess^{11,12}. As the risk of intraoperative emergency during dental treatment is higher in patients with diabetes than those without, the primary care physician and the dentist must be able to collaborate effectively in the management of the patient. Good communication between health professionals is key to maintaining a coordinated care for patients with diabetes that have multiple needs such as Mrs. L.

Patient centredness was derived from the need to understand the experience of patients and integrate their experience in the delivery of care. This becomes even more important in the delivery of care for patients with chronic disease such as diabetes. Formulation of care must not only meet the clinical needs of the patient, but also their psychosocial needs in regard to the disease being treated.

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