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Diabetes mellitus in special situations

Cukrzyca w sytuacjach szczególnych

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None

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Summary

Patients with diabetes encounter in their daily life many different specific situations. Tackling the problems connected with them may be difficult for the patients as well as for treating them doctors, as solutions are only rarely provided for in the guidelines. In the present paper the following situations that may happen to a diabetic patients are described: periods of fasting and qualitative limitations in different religions, periodontal diseases and other diseases of mouth cavity, cognitive disorders (dementia), psychical diseases in diabetes, osteoporosis and fractures, use of diabetogenic drugs and unconventional methods of diabetes treatment. For each situation a short description is provided and 2-5 practical guidelines are listed. The guidelines are thought to be a practical help for a diabetologists, internists or a physicians who are working with patient with diabetes in their daily practice.

Streszczenie

Chorzy na cukrzycę w codziennym życiu często mogą się znaleźć w różnych specyficznych sytuacjach. Rozwiązywanie związanych z nimi problemów może być trudne zarówno dla nich, jak i dla leczących ich lekarzy, jako że opisy tych sytuacji i ich możliwych rozwiązań rzadko można spotkać w zaleceniach klinicznych. W niniejszej pracy opisano następujące sytuacje, które mogą zdarzyć się choremu na cukrzycę: okresy postu ilościowego i jakościowego w różnych religiach, choroby przyzębia i inne choroby jamy ustnej, zaburzenia poznawcze, choroby psychiczne, osteoporoza i złamania, użycie leków diabetogennych, niekonwencjonalne metody leczenia cukrzycy. Każdej z tych sytuacji poświęcono zwięzłe omówienie, podając od 2 do 5 krótkich zaleceń. Zalecenia te zostały pomyślane jako praktyczna pomoc dla diabetologów, internistów i lekarzy POZ, którzy w swojej codziennej praktyce zajmują się chorymi na cukrzycę.

INTRODUCTION

Prevalence of diabetes mellitus is high. It is assumed that in next 20 years the number of people with diabetes will exceed 600 millions (1). Even taking into account only this number it seems obvious that during their life many patients with diabetes will be forced to tackle different problems, connected with special situations. The same is true for treating them doctors. This paper aims to facilitate dealing with these problems, shortly describing some of such situations and providing for each of them short guidelines to follow.

PERIODS OF FASTING AND QUALITATIVE LIMITATIONS IN DIFFERENT RELIGIONS

The periods of fasting are usually caused by a religious motivation. In most religions, however, they are

rather short, and fast is not total (especially in the case of longer fasting periods the limitations are qualitative, not quantitative). In such cases they are not causing bigger therapeutic problems.

The situation is different in Ramadan. In the period of this fast, which lasts approximately one month, healthy muslim older than 10 years should abstain from any foods and liquids between sunrise and sunset (2). Consequence of this rule is change of the regular eating habits and consuming of only two meals: big evening meal (after sunset) and breakfast (before sunrise). Additionally, Ramadan period moves in consecutive years and may happen at any month. That means that depending on the length of the day, time between the two consumed meals may be shorter or longer. From all the reasons mentioned above Ramadan is a chal-

lenge for those diabetic patients who want to follow the fast rules (and from different reasons many if not most of them do that) and treating them doctors. The reader will find below practical statements and guidelines that may help the doctors in our country to deal with muslim patients whose population increases in Poland. Below the reader will find five simple guidelines, based on IDF Ramadan guidelines (3):

1. In patients with type 2 diabetes metformin should be preferred during Ramadan (optimal is probably long-acting metformin used before the evening meal). Long-acting sulphonylureas are not indicated.
2. Dipeptidylpeptidase-4 inhibitors can be recommended. Many studies confirmed the efficacy of sitagliptin and vildagliptin during Ramadan, incidence of hypoglycemia was low.
3. In insulin-treated patients with type 1 diabetes in the period of Ramadan it is recommended to reduce the long/intermediate acting insulin dose by 15-30% and to maintain short-acting insulin dose before the evening meal. Long acting insulin analogs are better than intermediate action insulins. Short acting insulin dose before breakfast usually should be also decreased, sometimes substantially. In patients treated with a premixed insulin morning dose should be decreased by 25-50%, and evening dose should be maintained.
4. In patients with type 1 diabetes during Ramadan a basal bolus regimen should be preferred. Long-acting insulin analogs should preferred over intermediate insulins. Dose modifications should be similar as in type 2 diabetes (see above).
5. In the light of informations regarding increased frequency of ketotic acidosis after SGLT-2 inhibitors (like canagliflozin) treatment with those drugs during fasting periods, especially quantitative, should not be recommended.

PERIODONTAL DISEASES AND OTHER DISEASES OF MOUTH CAVITY

Diabetes is a risk factor of diseases of oral cavity, especially of chronic periodontitis. Inflammation of oral cavity, in turn, is connected with worse diabetes control (4). This vicious circle of inflammation and diabetes may result in comorbidities and organ damage, e.g. hypertension or left ventricular hypertrophy. Therefore it is recommended that patients with diabetes treat chronic periodontitis, and patients with chronic periodontitis maintain good metabolic control of diabetes. This is important also for another reason. Diabetes as well as chronic periodontitis is associated with accelerated atheromatosis and increased cardiovascular risk (5).

Cardiovascular incidents are, in turn, the most frequent cause of death in diabetic patients and in general population. It seems therefore that treatment of chronic periodontitis is at least as important as treatment of other diabetes complications, not only because of im-

proved metabolic control of diabetes after periodontal treatment (6).

There is a range of other oral cavity diseases that may co-exist with diabetes, and maybe most important one, at least in our country, is caries. Caries is however much more easy to treat than chronic periodontitis. Caries in patients with diabetes should be avoided and treated.

1. In patients with diabetes with poor metabolic control of the disease, tobacco smoking and improper oral cavity hygiene increases the risk of chronic periodontitis.
2. Patients with diabetes should be controlled by a stomatologist once yearly, and be referred to a stomatologist in case of diagnosis of chronic periodontitis. Decisions regarding a treatment should be made by a stomatologist.
3. In patients with well controlled diabetes there are no contraindications to teeth extractions.

COGNITIVE DISORDERS (DEMENTIA)

Diabetes and cognitive disorders may influence each other, building a vicious circle. From one side it was shown that risk of the development of cognitive impairment increases with the time of diabetes duration and is the greater the poorer is the metabolic control of the disease (7, 8). From the other side cognitive impairment and dementia, especially advanced, negatively influences metabolic control in diabetes (9).

1. Patients with diabetes, especially in older age, should be screened for cognitive impairment, and if present, should be properly diagnosed and treated.
2. In patients with cognitive disorders hypoglycemia, as well as substantial hyperglycemia should be avoided (10).

PSYCHICAL DISEASES

Psychical diseases may influence diabetes control as a consequence of worse treatment compliance and persistence (11, 12). In some diseases, like depressive disorders, the disease may be also negatively influenced by diabetes (13), similarly as in the case of cognitive impairment.

1. In the treatment of depressive disorders in patients with diabetes psychotherapy should be used.
2. In the pharmacologic treatment of depression selective inhibitors of serotonin uptake should be preferred.
3. Patients with diabetes (or with high risk of diabetes development) if necessary should be treated with new antipsychotic drugs (like aripiprazole, which decreases cardiovascular risk in comparison with drugs like olanzapine, quetiapine or risperidone) (14).
4. In patients with diabetes increase of glycemia or hemoglobin A1c is observed after initiation of antipsychotic treatment, change of the drug is indicated.

5. In patients with psychical disease especially with bipolar disorders or schizophrenia blood glucose concentration should be assessed before treatment start, 12 weeks after, and regularly once a year during a treatment period. If impaired fasting glucose was found, oral tolerance test should be performed.

OSTEOPOROSIS AND FRACTURES

Bone mineral diabetes is often low in patients with type 1 diabetes, whereas it is in normal range or increased in patients with type 2 of the disease. Fracture risk is however increased in both types, although much more in type 1 diabetes (15, 16).

1. In patients with diabetes vitamin D deficit should be corrected.
2. Antifracture treatment should be implemented in those patients who underwent a low-energy fracture. In elderly patients fracture risk may be assessed using the FRAX calculator (17). In younger patients FRAX should not be used and bone mineral density (Tscore < -2.5) should be used as indication for treatment.
3. Bearing in mind a possibility of future adynamic bone disease (especially in patients with chronic kidney disease) development, accumulating in bone bisphosphonates should not be preferred.

DIABETOGENIC DRUGS

There are many drugs that – in different mechanism – may exert diabetogenic effect and increase the risk of diabetes development or worsen its control.

Between them there are cardiologic drugs (amiodarone, disopiramide, dopamine), diuretics (thiazides and loop diuretics), antihypertensive drugs (beta blockers, diazoxide, clonidine, minoxidil), antihyperlipemic

drugs (statins, clofibrate, gemfibrozil, niacine), antidepressants, anticonvulsants antipsychotic drugs, glucocorticosteroids and other immunosuppressants (cyclosporine, tacrolimus), nonsteroidal anti-inflammatory drugs and others (18-20).

1. If a diabetogenic drug has to be used in patient with diabetes, it must be used.
2. Unnecessary treatment with diabetogenic drugs however must be avoided.
3. Patients treated with diabetogenic drugs should be screened for diabetes, those with diagnosed diabetes should be monitored and antidiabetic treatment should be modified if necessary to maintain a proper metabolic control.
4. In patients treated with glucocorticoids – there is often necessary to increase the dose of antidiabetic drugs, especially acting in the late morning and in the afternoon.

UNCONVENTIONAL METHODS OF DIABETES TREATMENT (PANCREAS AND ISLET TRANSPLANTATIONS, STEM CELLS TRANSPLANTATION, TREGS, VACCINATIONS, IMMUNOSUPPRESSIVE TREATMENT, BIONIC PANCREAS)

1. At present pancreas and kidney transplantation is a recognized therapeutic method in patients with diabetes nephropathy (21). This kind of treatment decreases mortality and increases life expectation in comparison to dialyzed patients.
2. Pancreas transplantation alone or islet transplantation may be taken into account in some patients (like those with recurrent severe hypoglycemia, hypoglycemia unawareness, hypoglycemia during sleep) (22).
3. Other unconventional methods of treatment should not be recommended at present.

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