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Diabetes, coronary artery disease and collaboration

LEDER

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Room for improvement in the effort to prevent coronary artery disease in patients with diabetes.

The association between diabetes, impaired glucose tolerance and cardiovascular disease is well documented, and joint European guidelines for the prevention of diabetes in patients with coronary artery disease have been drawn up by cardiologists and diabetes specialists working in collaboration (1).

Type 2 diabetes usually develops over several years and begins with impaired glucose tolerance, insulin resistance and hyperinsulinemia. This contributes to the development of macrovascular disease in the form of atherosclerosis as well as changes to the microcirculation. Type 2 diabetes doubles the risk of developing coronary artery disease (2). Endothelial dysfunction, inflammation of the vascular wall and vasoconstriction are important factors, in addition to effects on blood platelets and coagulation factors, leading towards a prothrombotic environment (3).

Fasting blood glucose will often be normal early in the development of type 2 diabetes, and macrovascular complications, such as acute myocardial infarction, will often occur before microvascular complications. This is the. reason for the widespread interest in studying the benefit of screening for undiagnosed diabetes in patients with coronary artery disease.

Traditionally, cardiologists have been too little involved in treatment of patients with diabetes and have left this to the general practitioner. Jortveit and colleagues should therefore be acknowledged for the study published in the Journal of the Norwegian Medical Association (4). Patients admitted to Sørlandet Hospital Arendal with a first diagnosis of coronary artery disease were screened for diabetes and followed up for several years after the event. Although similar large-scale studies have been conducted in other countries, this study is important because we do not have figures from Norway, and because many of the studies published are older and reflect a different therapeutic tradition.

Jortveit and colleagues found that 14 % of patients with coronary artery disease had known diabetes, while screening with HbA_{1c} diagnosed 4 % with unrecognised diabetes at disease onset. The percentage of patients with known diabetes in this material, in which half of the

patients had myocardial infarction, is consistent with a study from Oslo University Hospital, in which 13 % of the patients with myocardial infarction had known diabetes (5). In another study from the same hospital, patients with myocardial infarction with no known diabetes were tested for glucose tolerance three months after myocardial infarction (6). Altogether 25 % of these patients had a form of impaired glucose tolerance, whereas 5 % fulfilled the criteria for diabetes, which concurs well with the figures from Sørlandet Hospital Arendal.

Overall the studies from Southern and Eastern Norway indicate that the prevalence of undiagnosed diabetes is lower among Norwegian patients with coronary artery disease than what international findings have suggested (1). However, it is not possible to rule out some level of selection in the study populations. Screening of an older population with more advanced coronary artery disease will presumably result in a higher prevalence of both known and undiagnosed diabetes. The study from Oslo University Hospital also showed poor reproducibility of the oral glucose tolerance test, which was the recommended screening method at that time in 2007 (6). The most recent European guidelines now instead recommend HbA_{1C} as the first choice in screening of patients with coronary artery disease (1), the method used by Jortveit and colleagues.

The increased attention paid to the association between diabetes and coronary artery disease is important for several reasons. Today we have the possibility for effective primary prevention by means of lifestyle interventions as well as antihypertensive and cholesterol-lowering treatment, in addition to numerous antidiabetic drugs. This is thoroughly detailed in the national clinical guidelines for diabetes (7).

The study from Sørlandet Hospital Arendal showed that only half of the patients with known diabetes were treated with statins despite having a high prevalence of obesity, smoking and hypertension. This is consistent with my own experience and shows that primary prevention of cardiovascular disease in Norwegian patients with diabetes leaves room for improvement.

In contrast to treatment with statins and antihypertensive drugs, it has been difficult to demonstrate that treatment with antidiabetic drugs prevents macrovascular events (8). Increased prevalence of heart failure with the use of certain types of antidiabetic drugs has also been shown (8). However, we currently have several new drugs that have demonstrated a positive effect on cardiovascular mortality (9, 10).

The array of drugs with different cardiovascular safety profiles means that cardiologists ought to involve themselves to a greater degree in treatment of diabetes in patients with coronary artery disease, in close collaboration with general practitioners and specialists in diabetes care.

REFERENCES:

1. Rydén L, Grant PJ, Anker SD et al. ESC Guidelines on diabetes, pre-diabetes, and cardiovascular diseases developed in collaboration with the EASD: the Task Force on diabetes, pre-diabetes, and cardiovascular diseases of the European Society of Cardiology (ESC) and developed in collaboration with the European Association for the Study of Diabetes (EASD). Eur Heart J 2013; 34: 3035 - 87. [PubMed][CrossRef]

2. Sarwar N, Gao P, Seshasai SR et al. Diabetes mellitus, fasting blood glucose concentration, and risk of vascular disease: a collaborative meta-analysis of 102 prospective studies. Lancet 2010; 375: 2215 - 22. [PubMed][CrossRef]

3. Beckman JA, Creager MA, Libby P. Diabetes and atherosclerosis: epidemiology, pathophysiology, and management. JAMA 2002; 287: 2570 - 81. [PubMed][CrossRef]

4. Jortveit J, Kaldal A, Tonstad S. Forekomst av diabetes før og etter første gangs koronarsykdom. Tidsskr Nor Legeforen 2018. doi: 10.4045/tidsskr.17.0539.[CrossRef]

5. Ritschel VN, Seljeflot I, Arnesen H et al. Circulating levels of IL-6 receptor and gp130 and long-term clinical outcomes in ST-elevation myocardial infarction. J Am Heart Assoc 2016; 5: e003014. [PubMed][CrossRef]

6. Knudsen EC, Seljeflot I, Abdelnoor M et al. Abnormal glucose regulation in patients with acute ST-elevation myocardial infarction-a cohort study on 224 patients. Cardiovasc Diabetol 2009; 8: 6. [PubMed][CrossRef]

7. Helsedirektoratet. Nasjonal faglig retningslinje for diabetes. https://helsedirektoratet.no/retningslinjer/diabetes (2.2.2018).

8. Holman RR, Sourij H, Califf RM. Cardiovascular outcome trials of glucose-lowering drugs or strategies in type 2 diabetes. Lancet 2014; 383: 2008 - 17. [PubMed][CrossRef]

9. Marso SP, Daniels GH, Brown-Frandsen K et al. Liraglutide and cardiovascular outcomes in type 2 diabetes. N Engl J Med 2016; 375: 311 - 22. [PubMed][CrossRef]

10. Zinman B, Wanner C, Lachin JM et al. Empagliflozin, cardiovascular outcomes, and mortality in type 2 diabetes. N Engl J Med 2015; 373: 2117 – 28. [PubMed] [CrossRef] 10.4045/tidsskr.18.0152[CrossRef]

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