Literatura ACTA MEDICINAE 2/2017 Kardiologie | Diabetologie

Antikoagulační nebo antiagregační léčba u nemocných po infarktu myokardu a s fibrilací síní

doc. MUDr. Petr Heinc, Ph.D. | MUDr. Monika Kamasová | MUDr. Jan Látal | MUDr. Markéta Ječmenová | Leo Rec
I. interní klinika – kardiologická, Fakultní nemocnice, Olomouc

1 **Camm, A. J. – Lip, G. Y. – De Katerina, R., et al.**: 2012 focused update of the ESC Guidelines for the management of atrial fibrillation: an update of the 2010 ESC Guidelines for the management of atrial fibrillation. Developed with the special contribution of the European Heart Rhythm Association. *Europace*, 2012, 14, s. 1385–1413.
2 **Bernard, A. – Fauchier, L. – Pellegrin, C., et al.**: Anticoagulation in patients with atrial fibrillation undergoing coronary stent implantation. *Thromb Haemost*, 2013, 110, s. 560–568.
3 **Steg, P. G. – James, S. K. – Atar, D., et al.**: ESC Guidelines for the management of acute myocardial infarction in patients presenting with ST-segment elevation. *Eur Heart J*, 2012, 33, s. 2569–2619.
4 **Roffi, M. – Patrono, C. – Collet, J. P., et al.**: 2015 ESC Guidelines for the management of acute coronary syndromes in patients presenting without persistent ST-segment elevation. *Eur Heart J*, 2016, 37, s. 267–315.
5 **Lip, G. Y. – Windecker, S. – Huber, K., at al.**: Management of antithrombotic therapy in atrial fibrillation patients presenting with acute coronary syndrome and/or undergoing percutaneous coronary or valve interventions: a joint consensus document of the European Society of Cardiology. *Eur Heart J*, 2014, 35, s. 3155–3179.
6 WOEST study investigators. Use of clopidogrel with or without aspirin in patients taking oral anticoagulant therapy and undergoing percutaneous coronary intervention: an open-label, randomised, controlled trial. *Lancet*, 2013, 381, s. 1107–1115.
7 **Gibbon, C. M. – Mehran, R. – Bode, C. H., et al.**: Prevention of bleeding in patients with atrial fibrillation undergoing PCI. *N Engl J Med*, 2016, 375, s. 2423–2434.
8 **Heidbuchel, H. – Verhamme, P. – Alings, M., et al.**: Updated European Heart Rhythm Association Practical Guide on the use of non-vitamin K antagonist anticoagulants in patients with non-valvular atrial fibrillation. *Europace*, 2015, 17, s. 1467–1507.
9 **Connolly, S. J. – Wallentin, L. – Ezekowitz, M. D., et al.**: The long term multi-center observational study of dabigatran treatment in patients with atrial fibrillation: (RELY-ABLE) study. *Circulation*, 2013, 128, s. 237–243.
10 **Larsen, T. B. – Rasmussen, L. H. – Skjoth, F., et al.**: Efficacy and safety of dabigatran etexilate and warfarin in 'real world' patients with atrial fibrillation: a prospective nationwide cohort study. *J Am Coll Cardiol*, 2013, 61, s. 2264–2273.
11 **Sarafoff, N. – Martischnig, A. – Dealer, J., et al.**: Triple therapy with aspirin, prasugrel, and vitamin K antagonists in patients with drug-eluting stent implantation and an indication for oral anticoagulation. *J Am Coll Cardiol*, 2013, 61, s. 2060–2066.
12 **Lamberts, M. – Gislason, G. H. – Olesen, J. B., et al.**: Oral anticoagulation and antiplatelets in atrial fibrillation patients after myocardial infarction and coronary intervention. *J Am Coll Cardiol*, 2013, 62, s. 981–989.

Blokáda systému renin-angiotenzin-aldosteron po infarktu myokardu

doc. MUDr. Filip Málek, Ph.D., MBA Ambulance srdečního selhání a hypertenze,
Kardiovaskulární centrum, Nemocnice Na Homolce, Praha

1 **Lon, E. M. – Yusuf, S. – Jha, P., et al.**: Emerging role of angiotensin-converting enzyme inhibitors in cardiac and vascular protection. *Circulation*, 1994, 90, s. 2056–2069.
2 **Remes, J.**: Neuroendocrine activation after myocardial infarction. *Br Heart J*, 1994, 72, s. S65–S69.
3 **Køber, L. – Torp-Pedersen, C. – Carlsen, J. E., et al.**: A clinical trial of the angiotensin-converting-enzyme inhibitor trandolapril in patients with left ventricular dysfunction after myocardial infarction. Trandolapril Cardiac Evaluation (TRACE) Study Group. *N Engl J Med*, 1995, 333, s. 1670–1676.
4 **Dickstein, K. – Kjekshus, J.**; OPTIMAAL Study Group: Effects od losartan and captopril on mortality and morbidity in high-risk patients after acute myocardial infarction: the OPTIMAAL randomised trial. *Lancet*, 2002, 360, s. 752–760.
5 **Pfeffer, M. A. – McMurray, J. J. V. – Velazquez, E. J., et al.**; for VALIANT Investigators: Valsartan, captopril, or both in myocardial infarction complicated by heart failure, left ventricular dysfunction, or both. *N Engl J Med*, 2003, 349, s. 1893–1906.
6 **Pitt, B. – Remme, W. – Zannad, F., et al.**; for the Eplerenone Post–Acute Myocardial Infarction Heart Failure Efficacy and Survival Study Investigators: Eplerenone, a selective aldosterone blocker, in patients with left ventricular dysfunction after myocardial infarction. *N Engl J Med*, 2003, 348, s. 1309–1321.
7 **Widimský, P. – Kala, P. – Rokyta, R.**: Souhrn Doporučených postupů ESC pro diagnostiku a léčbu pacientů s akutním infarktem myokardu s elevacemi úseku ST z roku 2012. Připraven Českou kardiologickou společností. (Summary of the 2012 ESC Guidelines for the management of acute myocardial infarction in patiens presenting with ST-segment elevations. Prepared by the Czech Society of Cardiology). *Cor et Vasa*, 2012, 54, s. e273–e289.

Kdy podávat betablokátory u akutního infarktu myokardu?

prof. MUDr. Jiří Vítovec, CSc. | prof. MUDr. Lenka Špinarová, Ph.D.
1. interní kardioangiologická klinika LF MU a FN u sv. Anny, Brno
prof. MUDr. Jindřich Špinar, CSc. Interní kardiologická klinika LF MU a FN, Brno

1 **Hjalmarson, A. – Elmfeldt, D. – Herlitz, J., et al.**: Effect on mortality of metoprolol in acute myocardial infarction. A double-blind randomised trial. *Lancet*, 1981, 2, s. 823–827.
2 Principal Investigators and Co-investigators (Participating Centers): **von der Lippe, G. –Schartum Hansen, H. – Lund-Johansen, P., et al.**: Timolol-induced reduction in mortality and reinfarction in patients surviving acute myocardial infarction. *N Engl J Med*, 1981, 304, s. 801–807.
3 A randomized trial of propranolol in patients with acute myocardial infarction. I. Mortality results. *JAMA*, 1982, 247, s. 1707–1714. Autoři neuvedeni.
4 **Yusuf, S. – Peto, R. – Lewis, J., et al.**: Beta blockade during and after myocardial infarction: an overview of the randomized trials. *Prog Cardiovasc Dis*, 1985, 27, s. 335–371.
5 **Bangalore, S. – Makani, H. – Radford, M., et al.**: Clinical outcomes with β-blockers for myocardial infarction: a metanalysis of randomized trials. *Am J Med*, 2014, 127, s. 939–953.
6 **Misumida, N. – Harjai, K. – Kernis, S., et al.**: Does oral beta-blocker therapy improve long-term survival in ST-segment elevation myocardial infarction with preserved systolic function? A meta-analysis. *J Cardiovasc Pharmacol Therapeut*, 2016, 21, s. 280–285.
7 **Hradec, J.**: Kontroverze kolem betablokátorů. *Vnitřní Lek*, 2015, 61, s. 410–416.
8 **Vítovec, J. – Špinar, J.**: Otázky kolem betablokátorů u kardiovaskulárních onemocnění. *Postgraduální Medicína*, 2016, 18, s. 106–109.
9 **Widimský, P. – Kala, P. – Rokyta, R.**: Summary of the 2012 ESC Guidelines for the management of acute myocardial infarction in patients presenting with ST-segment elevations. Prepared by the Czech Society of Cardiology. *Cor Vasa*, 2012, 54, s. e273–e289.
10 **Widimský, P. – Rokyta, R. – Hlinomaz, O.**: Summary of the 2015 ESC Guidelines for the management of acute coronary syndromes in patients presenting without persistent ST-segment elevation. Prepared by the Czech Society of Cardiology. *Cor Vasa*, 2016, 58, s. e4–e28.
11 **Špinar, J. – Vítovec, J.**: COSYREL – lék pro pacienty s ICHS a srdečním selháním. *Kard Revue Int Med*, 2017, 18, v tisku.

Edoxaban před uvedením na český trh

MUDr. Jana Matoušková | prof. MUDr. Petr Neužil, CSc.
Kardiocentrum Nemocnice Na Homolce, Praha

1 **Cada, J. D. – Baker, D. E. – Ingram, K.**: Edoxaban – drug reviews. *Hospital Pharmacy*, 2015, 50, s. 619–634.
2 **Giugliano, R. P. – Ruff, C. T. – Braunwald, E., et al.**: Edoxaban versus warfarin in patients with atrial fibrillation. *New Eng J Med*, 2013, 369, s. 2093–2104.
3 **Goette, A. – Merino, J. L. – Ezekowitz, M. D., et al.**: Edoxaban versus enoxaparin–warfarin in patients undergoing cardioversion of atrial fibrillation (ENSURE-AF): a randomised, open-label, phase 3b trial. *Lancet*, 2016, publikováno online 30. 8. 2016, s. 1–9.
4 **The Hokusai-VTE Investigators**: Edoxaban versus warfarin for the treatment of symptomatic venous thromboembolism. *New Eng J Med*, 2013, 369, s. 1406–1415.
5 **Verheugt, F. W. A**: What are the effects of edoxaban in the general population and in the elderly? *Eur Heart J Suppl*, 2016, 18, suppl. I, s. 113–117.
6 **Es, N. – Di Nisio, M. – Bleker, S. M., et al.**: Edoxaban for treatment of venous thromboembolism in patients with cancer. Rationale and design of the Hokusai VTE-cancer study. *Thrombosis and Haemostasis*, 2015, 114, s. 1268–1276.
7 **Ansell, J. E. – Bakhru, S. H. – Laulicht, B. E., et al.**: Single-dose ciraparantag safely and completely reverses anticoagulant effects of edoxaban. *Thrombosis and Haemostasis*, 2017, 2, s. 1–8.
8 **Ruff, C. T. – Giugliano, R. P. – Braunwald, E., et al.**: Comparison of the efficacy and safety of new oral anticoagulants with warfarin in patients with atrial fibrillation: a meta-analysis of randomised trials. *Lancet*, 2014, 383, s. 955–962.
9 **Fanola, C. L. – Giugliano, R. P. – Ruff, C. T., et al.**: A novel risk prediction score in atrial fibrillation for a net clinical outcome from the ENGAGE AF-TIMI 48 randomized clinical trial. *Eur Heart J*, 2017, 0, s. 1–9.
10 **Weitz, J. I. – Connolly, S. J. – Patel, I., et al.**: Randomised, parallel--group, multicentre, multinational phase 2 study comparing edoxaban, an oral factor Xa inhibitor, with warfarin for stroke prevention in patients with atrial fibrillation. *Thromb Haemost*, 2010, 104, s. 633–641.
11 SPC přípravku Lixiana – 15, 30, 60 mg, SÚKL, Praha, 2016.

Fabryho choroba z pohledu echokardiologa

MUDr. Josef Marek | prof. MUDr. Tomáš Paleček, Ph.D. | prof. MUDr. Aleš Linhart, DrSc.
II. interní klinika – klinika kardiologie a angiologie, VFN a 1. LF UK, Praha

1 **Germain, D. P.**: Fabry disease. *Orphanet J Rare Dis,* 2010, 5, s. 30.
2 **Mehta, A. – Clarke, J. T. – Giugliani, R., et al.**: Natural course of Fabry disease: changing pattern of causes of death in FOS – Fabry Outcome Survey. *J Med Genet,* 2009,46, s. 548–552.
3 **Eng, C. M. – Guffon, N. – Wilcox W. R., et al.**: Safety and efficacy of recombinant human alpha-galactosidase A replacement therapy in Fabry's disease. *N Engl J Med,* 2001, 345, s. 9–16.
4 **Schiffmann, R. – Kopp, J. B. – Austin, H. A. 3rd., et al.**: Enzyme replacement therapy in Fabry disease: a randomized controlled trial. *JAMA,* 2001, 285, s. 2743–2749.
5 **Wilcox, W. R. – Oliveira, J. P. – Hopkin, R. J., et al.**: Females with Fabry disease frequently have major organ involvement: lessons from the Fabry Registry. *Mol Genet Metab,* 2008, 93, s. 112–128.
6 **Echevarria, L. – Benistan, K. – Toussaint, A., et al.**: X-chromosome inactivation in female patients with Fabry disease. *Clin Genet,* 2016, 89, s. 44–54.
7 **Meikle, P. J. – Hopwood, J. J. – Clague, A. E., et al.**: Prevalence of lysosomal storage disorders. *JAMA,* 1999, 281, s. 249–254.
8 **Spada, M. – Pagliardini, S. – Yasuda, M., et al.**: High incidence of later-onset fabry disease revealed by newborn screening. *Am J Hum Genet,* 2006, 79, s. 31–40.
9 **Linhart, A. – Kampmann, C. – Zamorano, J. L., et al.**: Cardiac manifestations of Anderson-Fabry disease: results from the international Fabry outcome survey. *Eur Heart J,* 2007, 28, s. 1228–1235.
10 **Linhart, A. – Palecek, T. – Bultas, J., et al.**: New insights in cardiac structural changes in patients with Fabry's disease. *Am Heart J,* 2000, 139, s. 1101–1108.
11 **Kozor, R. – Callaghan, F. – Tchan, M., et al.**: A disproportionate contribution of papillary muscles and trabeculations to total left ventricular mass makes choice of cardiovascular magnetic resonance analysis technique critical in Fabry disease. *J Cardiovasc Magn Reson* , 2015, 17, s. 22.
12 **Linhart, A. – Luanda, J. C. – Palecek, T., et al.**: Cardiac manifestations in Fabry disease. *J Inherit Metab Dis,* 2001, 24, suppl. 2, s. 75–83.
13 **Takenaka, T. – Teraguchi, H. – Yoshida, A., et al.**: Terminal stage cardiac findings in patients with cardiac Fabry disease: an electrocardiographic, echocardiographic, and autopsy study. *J Cardiol* , 2008, 51, s. 50–59.
14 **Palecek, T. – Linhart, A. – Luanda, J. C., et al.**: Early diastolic mitral annular velocity and color M-mode flow propagation velocity in the evaluation of left ventricular diastolic function in patients with Fabry disease. *Heart Vessels,* 2006, 21, s. 13–19.
15 **Kramer, J. – Niemann, M. – Stork, S., et al.**: Relation of burden of myocardial fibrosis to malignant ventricular arrhythmias and outcomes in Fabry disease. *Am J Cardiol,* 2014, 114, s. 895–900.
16 **Shah, J. S. – Hughes, D. A. – Sachdev, B., et al.**: Prevalence and clinical significance of cardiac arrhythmia in Anderson-Fabry disease. *Am J Cardiol,* 2005, 96, s. 842–846.
17 **Kozor, R. – Grieve, S. M. – Tchan, M. C., et al.**: Cardiac involvement in genotype-positive Fabry disease patients assessed by cardiovascular MR. *Heart,* 2016, 102, s. 298–302.
18 **Pieroni, M. – Chimenti, C. – De Cobelli, F., et al.**: Fabry's disease cardiomyopathy: echocardiographic detection of endomyocardial glycosphingolipid compartmentalization. *J Am Coll Cardiol,* 2006, 47, s. 1663–1671.
19 **Mundigler, G. – Gaggl, M. – Heinze, G., et al.**: The endocardial binary appearance ("binary sign") is an unreliable marker for echocardiographic detection of Fabry disease in patients with left ventricular hypertrophy. *Eur J Echocardiogr,* 2011, 12, s. 744–749.
20 **Kounas, S. – Demetrescu, C. – Pantazis, A. A., et al.**: The binary endocardial appearance is a poor discriminator of Anderson-Fabry disease from familial hypertrophic cardiomyopathy. *J Am Coll Cardiol* , 2008, 51, s. 2058–2061.
21 **Tops, L. F. – Delgado, V. – Marsan, N. A., et al.**: Myocardial strain to detect subtle left ventricular systolic dysfunction. *Eur J Heart Fail,* 2017, 19, s. 307–313.
22 **Pieroni, M. – Chimenti, C. – Ricci, R., et al.**: Early detection of Fabry cardiomyopathy by tissue Doppler imaging. *Circulation* , 2003, 107, s. 1978–1984.
23 **Shanks, M. – Thompson, R. B. – Paterson, I. D., et al.**: Systolic and diastolic function assessment in fabry disease patients using speckle-tracking imaging and comparison with conventional echocardiographic measurements. *J Am Soc Echocardiogr,* 2013, 26, s. 1407–1414.
24 **Labombarda, F. – Saloux, E. – Milesi, G., et al.**: Loss of base-to-apex circumferential strain gradient: A specific pattern of Fabry cardiomyopathy? *Echocardiography,* 2017, publikováno elektronicky před tiskem.
25 **Weidemann, F. – Niemann, M. – Hermann, S., et al.**: A new echocardiographic approach for the detection of non-ischaemic fibrosis in hypertrophic myocardium. *Eur Heart J,* 2007, 28, s. 3020–3026.
26 **Kamer, J. – Niemann, M. – Liu, D., et al.**: Two-dimensional speckle tracking as a non-invasive tool for identification of myocardial fibrosis in Fabry disease. *Eur Heart J,* 2013, 34, s. 1587–1596.
27 **Weidemann, F. – Breunig, F. – Beer, M., et al.**: Improvement of cardiac function during enzyme replacement therapy in patients with Fabry disease: a prospective strain rate imaging study. *Circulation* , 2003, 108, s. 1299–1301.
28 **Weidemann, F. – Niemann, M. – Breunig, F., et al.**: Long-term effects of enzyme replacement therapy on fabry cardiomyopathy: evidence for a better outcome with early treatment. *Circulation* , 2009, 119, s. 524–529.
29 **Palecek, T. – Dostalova, G. – Kuchynka, P., et al.**: Right ventricular involvement in Fabry disease. *J Am Soc Echocardiogr* , 2008, 21, s. 1265–1268.
30 **Graziani, F. – Laurito, M. – Pieroni, M., et al.**: Right ventricular hypertrophy, systolic function, and disease severity in Anderson-Fabry disease: an echocardiographic study. *J Am Soc Echocardiogr* , 2017, 30, s. 282–291.
31 **Morris, D. A. – Blaschke, D. – Canaan-Kuhl, S., et al.**: Global cardiac alterations detected by speckle-tracking echocardiography in Fabry disease: left ventricular, right ventricular, and left atrial dysfunction are common and linked to worse symptomatic status. *Int J Cardiovasc Imaging,* 2015, 31, s. 301–313.
32 **Niemann, M. – Breunig, F. – Beer, M., et al.**: The right ventricle in Fabry disease: natural history and impact of enzyme replacement therapy. *Heart,* 2010, 96, s. 1915–1919.
33 **Siest, W. – Machann, W. – Breunig, F., et al.**: Right ventricular involvement in patients with Fabry's disease and the effect of enzyme replacement therapy. *Rofo,* 2011, 183, s. 1037–1042.
34 **Pichette, M. – Serri, K. – Page, M., et al.**: Impaired left atrial function in Fabry disease: a longitudinal speckle-tracking echocardiography study. *J Am Soc Echocardiogr,* 2017, 30, s. 170–179.
35 **Boyd, A. C. – Lo, Q. – Devine, K., et al.**: Left atrial enlargement and reduced atrial compliance occurs early in Fabry cardiomyopathy. *J Am Soc Echocardiogr,* 2013, 26, s. 1415–1423.
36 **Desnick, R. J. – Blieden, L. C. – Sharp, H. L., et al.**: Cardiac valvular anomalies in Fabry disease. Clinical, morphologic, and biochemical studies. *Circulation,* 1976, 54, s. 818–825.
37 **Weidemann, F. – Strotmann, J. M. – Niemann, M., et al.**: Heart valve involvement in Fabry cardiomyopathy. *Ultrasound Med Biol* , 2009, 35, s. 730–735.
38 **Barbey, F. – Qanadli, S. D. – Juli, C., et al.**: Aortic remodelling in Fabry disease. *Eur Heart J,* 2010, 31, s. 347–353.
39 **Sachdev, B. – Takenaka, T. – Teraguchi, H., et al.**: Prevalence of Anderson-Fabry disease in male patients with late onset hypertrophic cardiomyopathy. *Circulation,* 2002, 105, s. 1407–1411.
40 **Chimenti, C. – Pieroni, M. – Morgante, E., et al.**: Prevalence of Fabry disease in female patients with late-onset hypertrophic cardiomyopathy. *Circulation,* 2004, 110, s. 1047–1053.
41 **Nakao, S. – Takenaka, T. – Maeda, M., et al.**: An atypical variant of Fabry's disease in men with left ventricular hypertrophy. *N Engl J Med* , 1995, 333, s. 288–293.
42 **Elliott, P. – Baker, R. – Pasquale, F., et al.**: Prevalence of Anderson-Fabry disease in patients with hypertrophic cardiomyopathy: the European Anderson-Fabry Disease survey. *Heart,* 2011, 97, s. 1957–1960.
43 **Palecek, T. – Honzikova, J. – Poupetova, H., et al.**: Prevalence of Fabry disease in male patients with unexplained left ventricular hypertrophy in primary cardiology practice: prospective Fabry cardiomyopathy screening study (FACSS). *J Inherit Metab Dis,* 2014, 37, s. 455–460.
44 **Banikazemi, M. – Bultas, J. – Waldek, S., et al.**: Agalsidase-beta therapy for advanced Fabry disease: a randomized trial. *Ann Intern Med* , 2007, 146, s. 77–86.
45 **Hughes, D. A. – Elliott, P. M. – Shah, J., et al.**: Effects of enzyme replacement therapy on the cardiomyopathy of Anderson-Fabry disease: a randomised, double-blind, placebo-controlled clinical trial of agalsidase alfa. *Heart,* 2008, 94, s. 153–158.
46 **Mehta, A. – Beck, M. – Elliott, P., et al.**: Enzyme replacement therapy with agalsidase alfa in patients with Fabry's disease: an analysis of registry data. *Lancet,* 2009, 374, s. 1986–1996.
47 **Markham, A.**: Migalastat: first global approval. *Drugs,* 2016, 76, s. 1147–1145.

Obtížně léčitelná hypertenze

doc. MUDr. Jitka Mlíková Seidlerová, Ph.D.
Centrum pro výzkum a léčbu arteriální hypertenze, II. interní klinika, FN a LF v Plzni

1 **Ceral, J. – Habrdová, V. – Vořížek, V., et al.**: Difficult-to-control arterial hypertension or uncooperative patients? The assessment of serum antihypertensive drug levels to differentiate non-responsiveness from non-adherence to recommended therapy. *Hypertens Res*, 2011, 34, s. 87–90.
2 **Štrajch, B. – Petrák, O. – Zelinka, T., et al.**: Precise assessment of non-compliance with the antihypertensive therapy in patients with resistant hypertension using toxicological serum analysis. *J Hypertens*, 2013, 31, s. 2455–2461.
3 **Jung, O. – Gechter, J. L. – Wunder, C., et al.**: Resistant hypertension? Assessment of adherence by toxicological arinalysis. *J Hypertens*, 2013, 31, s. 766–774.
4 **Filipovský, J. – Widimský, J. Jr. – Ceral, J., et al.**: Diagnostické a léčebné postupy u arteriální hypertenze – verze 2012. Doporučení České společnosti pro hypertenzi. *Vnitř Lék*, 2012, 58, s. 785–801.
5 2013 Practice guidelines for the management of arterial hypertension of the European Society of Hypertension (ESH) and the European Society of Cardiology (ESC): ESH/ESC Task Force for the Management of Arterial Hypertension. *J Hypertens*, 2013, 31, s. 1925–1938.
6 **Bangalore, S. – Kamalakkannan, G. – Parkar, S., et al.**: Fixed-dose combinations improve medication compliance: a meta-analysis. *Am J Med*, 2007, 120, s. 713–719.
7 **Parati, G. – Schumacher, H.**: Blood pressure variability over 24 h: prognostic implications and treatment perspectives. An assessment using the smoothness index with telmisartan-amlodipine monotherapy and combination. *Hypertens Res*, 2014, 37, s. 187–193.
8 **Parati, G. – Dolan, E. – Ley, L., et al.**: Impact of antihypertensive combination and mono treatments on blood pressure variability: assessment by old and new indices. Data from a large ambulatory blood pressure monitoring database. *J Hypertens*, 2014, 32, s. 1326–1333.
9 **Mancia, G.**: Prognostic value of long-term blood pressure variability: the evidence is growing. *Hypertension*, 2011, 57, s. 141–143.
10 **Littlejohn, T. W. 3rd – Majul, C. R. – Olvera, R., et al.**: Results of treatment with telmisartan-amlodipine in hypertensive patients. *J Clin Hypertens* (Greenwich), 2009, 11, s. 207–213.

Ezetimib v léčbě hypercholesterolemie

MUDr. Petr Švejda, Ph.D. | prof. MUDr. Miroslav Souček, CSc.
II. interní klinika Fakultní nemocnice u sv. Anny, Brno

1 **Baigent, C. et al.**: Efficacy and safety of more intensive lowering of LDL cholesterol: a meta-analysis of data from 170 000 participants in 26 randomised trials. *Lancet*, 2010, 376, s. 1670–1681.
2 **Alberico, L. – Catapano, A. L.**: *2016 ESC/EAS Guidelines for the management of dyslipidaemias*. 2016, 253, s. 281–344.
3 **Kotseva, K., et al.**: EUROASPIRE Study Group, Cardiovascular prevention guidelines in daily practice: a comparison of EUROASPIRE I, II, and III surveys in eight European countries. *Lancet*, 2009, 373, s. 929–940.
4 **Gagne, C., et al.**: Efficacy and safety of ezetimibe added to ongoing statin therapy for treatment of patients with primary hypercholesterolemia. *Am J Cardiol*, 2002, 90, s. 1084–1091.
5 **Davidson, M. H., et al.**: Ezetimibe coadministered with simvastatin in patients with primary hypercholesterolemia. *J Am Col Cardiol*, 2002, 40, s. 2125–2134.
6 **Bays, H. E., et al.**: Effectiveness and tolerability of ezetimibe in patients with primary hypercholesterolemia: pooled analysis of two phase II studies. *Clinical Therapeutics*, 2001, 23, s. 1209–1230.
7 **Davidson, M. H., et al.**: Efficacy and safety of ezetimibe coadministered with statins: randomised, placebo-controlled, blinded experience in 2382 patients with primary hypercholesterolemia. *Int J Clin Pract*, 2004, 58, s. 746–755.
8 **Stein, S., et al.**: Achieving lipoprotein goals in patients at high risk with severe hypercholesterolemia: efficacy and safety of ezetimibe co-administered with atorvastatin. *Am Heart J*, 2004, 148, s. 447–455.
9 **Christopher, P., et al.**; for the IMPROVE-IT Investigators: Ezetimibe added to statin therapy after acute coronary syndromes. *N Engl J Med*, 2015, 372, s. 2387–2397.
10 **Soška, V., et al.**: Co je nového v léčbě dyslipidemií. *Acta medicinae*, 2016, 6, s. 17–18.
11 **Baigent, C.**: Study of heart and renal protection (SHARP). *Kidney Int*, 2003, suppl., s. S207–S210.

Nové molekuly pro terapii diabetu vyvíjené inovativními farmaceutickými společnostmi

MUDr. Jana Petrová | prof. MUDr. Milan Kvapil, CSc. Interní klinika 2. LF UK a FN Motol, Praha

1 **Pontiroli, A. E.:** Intranasal glucagon: a promising approach for treatment of severe hypoglycemia. *J Diabetes Sci Techno,* 2015, 9, s. 38–43.
2 **Rickels, M. R., et al.**: Intranasal glucagon for treatment of insulin-induced hypoglycemia in adults with type 1 diabetes: a randomized crossover noninferiority study. *Diabetes Care,* 2016, 39, s. 264–270.
3 Effectiveness and safety of intranasal glucagon for treatment of hypoglycemia in adults: NCT01994746. Clinical trials.gov, A service of the U.S. National Institutes of Health. Dostupné z: https://www.clinicaltrials.gov/ct2/show/NCT01994746?term=Nasal+glucagon&rank=5), vyhledáno 6. 3. 2017.
4 Dostupné z: https://www.lilly.com/pipeline/, vyhledáno 7. 3. 2017.
5 **Sherr, J. L.**: Glucagon nasal powder: a promising alternative to intramuscular glucagon in youth with type 1 diabetes. *Diabetes Care,* 2016, 39, s. 555–562.
6 Clinical usability of intranasal glucagon in treatment of hypoglycemia in children and adolescents: NCT02402933. Clinical trials.gov, A service of the U.S. National Institutes of Health. Dostupné z: https://www.clinicaltrials.gov/ct2/show/NCT02402933?term=Nasal+glucagon&rank=2, vyhledáno 7. 3. 2017.
7 Clinical usability of intranasal glucagon in treatment of hypoglycemia: NCT02171130. Clinical trials.gov, A service of the U.S. National Institutes of Health. Dostupné z: https://www.clinicaltrials.gov/ct2/show/NCT02171130?term=Nasal+glucagon&rank=1, vyhledáno 7. 3. 2017.
8 **Cengiz, E. – Weinzimer, S. A. – Sherr, J. L., et al.**: Faster in and faster out: accelerating insulin absorption and action by insulin infusion site warming. *Diabetes Technol Ther,* 2014, 16, s. 20–25.
9 **Hermansen, K. – Bohl, M. – Schioldan, A. G.**: Insulin aspart in the management of diabetes mellitus: 15 years of clinical experience. *Drugs*, 2016, 76, s. 41–74.
10 **Heise, T. – Hövelmann, U. – Brøndsted, L., et al.**: Faster-acting insulin aspart: earlier onset of appearance and greater early pharmacokinetic and pharmacodynamic effects than insulin aspart. *Diabetes Obes Metab,* 2015, 17, s. 682–688.
11 **Bode, B. W. – Johnson, J. A. – Hyveled, L., et al.**: Improved postprandial glycemic control with faster-acting insulin aspart in patients with type 1 diabetes using continuous subcutaneous insulin infusion. *Diabetes Technol Ther,* 2017, 19, s. 25–33.
12 **Heise, T. – Zijlstra, E. – Nosek, L., et al.**: Pharmacological properties of faster-acting insulin aspart vs insulin aspart in patients with type 1 diabetes receiving continuous subcutaneous insulin infusion: A randomized, double-blind, crossover trial. *Diabetes Obes Metab,* 2017, 19, s. 208–215.
13 **Heise, T. – Hövelmann, U. – Zijlstra, E., et al.**: Comparison of pharmacokinetic and pharmacodynamic properties between faster-acting insulin aspart and insulin aspart in elderly subjects with type 1 diabetes mellitus. *Drugs Aging,* 2017, 34, s. 29–38.
14 **Fath, M. – Danne, T. – Biester, T., et al.**: Faster-acting insulin aspart provides faster onset and greater early exposure vs insulin aspart in children and adolescents with type 1 diabetes mellitus. *Pediatr Diabetes*, 2017, 6, doi: 10.1111/pedi.12506, Epub před tiskem, PubMed PMID: 28165180.
15 Dostupné z: https://www.diabetesdaily.com/blog/novo-nordisks-ultra-fast-rapid-acting-insulin-fiasp-approved-in-europe-and-canada-336078/, vyhledáno 7. 3. 2017.
16 Dostupné z: http://www.novonordisk.com/investors/rd_pipeline.html, vyhledáno 7. 3. 2017.
17 **Nauck, M. A. – Petrie, J. R. et al.**; Study 1821 investigators: A phase 2, randomized, dose-finding study of the novel once-weekly human GLP-1 analog, semaglutide, compared with placebo and open-label liraglutide in patients with type 2 diabetes. *Diabetes Care*, 2016, 39, s. 231–241.
18 **Marso, S. P. – Bain, S. C. – Consoli, A., et al.**; SUSTAIN-6 investigators: Semaglutide and cardiovascular outcomes in patients with type 2 diabetes. *N Engl J Med,* 2016, 375, s. 1834–1844.
19 Dostupné z: http://www.merck.com/research/pipeline/home.html, vyhledáno 7. 3. 2017.
20 **Zaccardi, F. – Htike, Z. Z. – Webb, D. R., et al.**: Benefits and harms of once-weekly glucagon-like peptide-1 receptor agonist treatments: a systematic review and network meta-analysis. *Ann Intern Med*, 2016, 164, s. 102–113.
21 A preliminary study of the efficacy and safety of MK-8521 for type 2 diabetes (MK-8521-004), ClinicalTrials.gov identifier: NCT02492763, Clinical Trials.gov.
22 Dostupné z: https://www.intarcia.com/pipeline-technology/itca-650.html, vyhledáno 7. 3. 2017.
23 **Henry, R. R. – Rosenstock, J. – Logan, D. K., et al.**: Randomized trial of continuous subcutaneous delivery of exenatide by ITCA 650 versus twice-daily exenatide injections in metformin-treated type 2 diabetes. *Diabetes Care*, 2013, 36, s. 2559–2565.
24 **Henry, R. R. – Rosenstock, J. – Logan, D., et al.**: Continuous subcutaneous delivery of exenatide via ITCA 650 leads to sustained glycemic control and weight loss for 48 weeks in metformin-treated subjects with type 2 diabetes. *J Diabetes Complications*, 2014 , 28, s. 393–398.
25 **Sands, A. T.**: Sotagliflozin, a dual SGLT1 and SGLT2 inhibitor, as adjunct therapy to insulin in type 1 diabetes. *Diabetes Care,* 2015, 38, s. 1181–1188.
26 Efficacy, safety, and tolerability study of sotagliflozin as adjunct therapy in adult patients with type 1 diabetes mellitus who have inadequate glycemic control with insulin therapy (inTandem1). ClinicalTrials.gov identifier: NCT02384941, Clinical Trials.gov, A service of the U.S. National Institutes of Health.
27 Lexicon Pharmaceuticals © 2016, Lexicon reports positive top-line results in pivotal phase 3 tudy for sotagliflozin in pacients with type 1 Diabetes. Konferenční hovor a webcast 9. 9. 2016 v 8.00, online. Dostupné z: http://www.lexpharma.com/media-center/news/524-lexicon-reports-positive-top-line-results-in-pivotal-phase-3-study-for-sotagliflozin-in-patients-with-type-1-diabetes, vyhledáno 7. 3. 2017.
28 Efficacy, safety, and tolerability study of sotagliflozin as adjunct therapy in adult patients with type 1 diabetes mellitus who have

inadequate glycemic control with insulin therapy (inTandem2). ClinicalTrials.gov identifier: NCT02421510, Clinical Trials.gov, A service of the U.S. National Institutes of Health.
29 A phase 3 study to evaluate the safety of sotagliflozin in patients with type 1 diabetes who have inadequate glycemic control with insulin therapy alone (inTandem3), ClinicalTrials.gov identifier: NCT02531035, Clinical Trials.gov, A service of the U.S. National Institutes of Health.
30 **Zambrowicz, B. – Freiman, J. – Brown, P. M., et al.**: LX4211, a dual SGLT1/SGLT2 inhibitor, improved glycemic control in patients with type 2 diabetes in a randomized, placebo-controlled trial. *Clin Pharmacol Ther,* 2012, 92, s. 158–169.
31 **Rosenstock, J. – Cefalu, W. T. – Lapuerta, P., et al.**: Greater dose-ranging effects on A1C levels than on glucosuria with LX4211, a dual inhibitor of SGLT1 and SGLT2, in patients with type 2 diabetes on metformin monotherapy. *Diabetes Care,* 2015, 38, s. 431–438.
32 **Zambrowicz, B. – Lapuerta, P. – Strumph, P., et al.**: LX4211 therapy reduces postprandial glucose levels in patients with type 2 diabetes mellitus and renal impairment despite low urinary glucose excretion. *Clin Ther,* 2015, 37, s. 71–82.
33 Dostupné z: http://en.sanofi.com/Innovation/rd_portfolio/rd_portfolio.aspx, vyhledáno 7. 3. 2017.
34 **Tamaro, I. A. – Bader, M. – Li, Y., et al.**: Novel GLP-1R/GIPR co-agonist "twincretin" is neuroprotective in cell and rodent models of mild traumatic brain injury. *Exp Neurol*, 2017, 288, s. 176–186.
35 Dostupné z: https://clinicaltrials.gov/ct2/show/NCT02443155?term=NN9828&rank=1, vyhledáno 6. 3. 2017.
36 **Kvapil, M.**: Imeglimin. O této molekule ještě uslyšíme. In: Kvapil, M. (ed.): *Diabetologie 2016*. Triton, Praha, 2016.

Význam sakubitril/valsartanu v terapii srdečního selhání u pacientů s diabetes mellitus

doc. MUDr. Filip Málek, Ph.D., MBA Ambulance srdečního selhání a hypertenze, Kardiovaskulární centrum, Nemocnice Na Homolce, Praha

1 **Špinar, J. – Hradec, J. – Špinarová, L. – Vítovec, J.**: Souhrn Doporučených postupů ESC pro diagnostiku a léčbu akutního a chronického srdečního selhání z roku 2016. *Cor et Vasa*, 2016, 58, s. e530–e568.
2 **McMurray, J. J. – Packer, M. – Desai, A. S., et al.**: Angiotensin neprilysin inhibition versus enalapril in heart failure. *N Engl J Med*, 2014, 371, s. 993–1004.
3 **Kristensen, S. L. – Preiss, D. – Jund, P. S., et al.**; for the PARADIGM-HF Investigators and Committees: Risk related to pre-diabetes mellitus and diabetes mellitus in heart failure with reduce ejection fraction. *Circ Heart Fail*, 2016, 9, s. e002560.

Význam diuretik v léčbě hypertenze u pacientů s diabetes mellitus 2. typu

MUDr. Petra Vysočanová Interní kardiologická klinika FN Brno

1 **Grundy, S. M. – Benjamin, I. J. – Burke, G. L., et al.**: Diabetes and cardiovascular disease. A statement for health care professional from the American Heart Association. *Circulation*, 1999, 100, s. 1134–1346.
2 **Simonson, D. C.**: Etiology and prevalence of hypertension in diabetic patients. *Diabetes Care*, 1988, 11, s. 821–827.
3 **Cífková, R.**: Léčba hypertenze u pacientů s diabetem. *Farmakoterapie*, 2008, 3, s. 303–308.
4 **Borch-Johnson, K. – Nissen, R. – Nerup, J.**: Blood pressure after 40 years of insulin dependent diabetes. *Neohron*, 1985, 4, s. 11–12.
5 **Tarnow, L. – Rossing, P. – Gall, M. A., et al.**: Prevalence of arterial hypertension in diabetic patients before and after the JNC-V. *Diabetes Care*, 1994, 17, s. 1247–1251.
6 UK Prospective Diabetes Study Group. Tight blood pressure control and risk of macrovascular and microvascular complications in type 2 diabetes: UKPDS 38. *Br Med J*, 1998, 317, s. 703–713.
7 **Hannson, L. – Zanchetti, A. – Carruthers, S. G., et al.**: Effect of intensive blood pressure lowering and low dose aspirin in patients with hypertension: principal results of the Hypertension Optimal Treatment (HOT) randomized Trial. *Lancet*, 1998, 351, s. 1755–1762.
8 **Patel, A.**; ADVANCE Collaborating Group. Effects of a fixed combination of perindopril and indapamide on macrovascular and microvascular outcomes in patients type 2 diabetes mellitus (the ADVANCE trial): a randomised controlled trial. *Lancet*, 2007, 370, s. 829–840.
9 **Dluhy, R. G. – McMahon, G. T.**: Intensive glycemic control in the ACCORD and ADVANCE trials. *N Engl J Med*, 2008, 358, s. 2630–2633.
10 SHEP Cooperative Research Group. The Systolic Hypertension in the Elderly Program. *JAMA*, 1996, 276, s. 1886–1892.
11 **Jamerson, K. – Weber, M. A. – Bakris, G. L., et al.**: Benazepril plus amlodipine or hydrochlorothiazide for hypertension in high-risk patients. *N Engl J Med*, 2008, 359, s. 2417–2428.
12 **Bakris, G. – Hester, A. – Weber, M., et al.**: The diabetes subgroup baseline characteristics of the Avoiding Cardiovascular Events Through Combination Therapy in Patients Living With Systolic Hypertension (ACCOMPLISH) trial. *J Cardiol Metab Syndr*, 2008, 3, s. 229–233.
13 **Verdecchia, P. – Reboldi, G. – Angeli, F., et al.**: Adverse prognostic significance of new diabetes in treated hypertensive subjects. *Hypertension*, 2004, 43, s. 963–969.
14 **Ames, R. P.**: A comparison of blood lipid and blood pressure responses during the treatment of systemic hypertension with indapamide and with thiazides. *Am J Cardiol*, 1996, 77, s. 12b–16b.
15 **Gerber, A. – Weidmann, P. – Bianchetti, M. G., et al.**: Serum lipoproteins during treatment with the antihypertensive agent indapamide. *Hypertension*, 1985, 7, s. II164–II169.
16 **Sharabi, Y. – Adler, E. – Shamis, A., et al.**: Efficacy of add-on aldosterone receptor blocker in uncontrolled hypertension. *Am J Hypertens*, 2006, 19, s. 750–755.
17 **Kaplan, N. M.**: Indapamide. Is it the better diuretics for hypertension? *Hypertension*, 2015, 65, s. 983–984.
18 **Wiliams, B. – MacDonald, T. – Morant, S., et al.**: Spironolactone versus placebo, bisoprolol, and doxazosin to determine the optimal treatment for drug-resistant hypertension (PATHWAY-2): a randomised, double-blind, crossover trial. *Lancet*, 2015, 386, s. 2059–2068.
19 **Brown, M. J. – Williams, B. – Morant, S. V., et al.**: Effect of amiloride, or amiloride plus hydrochlorothiazide, versus hydrochlorothiazide on glucose tolerance and blood pressure (PATHWAY-3): a parallel-group, double-blind randomised phase 4 trial. *Lancet Diabetes Endocrinol*, 2016, 4, s. 136–147.
20 **Oxlund, C. S. – Henriksen, J. E. – Tarnow, L., et al.**: Low dose spironolactone reduces blood pressure in patients with resistant hypertenion and type 2 diabetes mellitus: adouble blind randomized clinical trial. *J Hypertens*, 2013, 31, s. 2094–2102.

Bezpečnost a účinnost pioglitazonu – optimální přímé farmakologické intervence inzulinové rezistence

doc. MUDr. Alena Šmahelová, Ph.D. 3. interní klinika metabolická a gerontologická FN a LF UK, Hradec Králové

1 **Fouqueray, P. – Pirags, V., et al.**: The efficacy and safety of imeglimin as add-on therapy in patients with type 2 diabetes inadequately controlled with sitagliptin monotherapy. *Diabetes Care*, 2014, 37, s. 1924–1930.
2 **Inzucchi, S. – Bergenstal, R., et al.**: Management of hyperglycemia in type 2 diabetes, 2015: A patient-centered approach: Update to a position statement of the American Diabetes Association and the European Association for the Study of Diabetes. *Diabetes Care*, 2015, 38, s. 140–149.
3 **Schwarz, S. – Epstein, S., et al.**: The time is right for a new classification system for diabetes. Rationale and implications of the beta-cell-centric classification schema. *Diabetes Care,* 2016, 39, s. 179–186.
4 **Yki-Järvinen, H.**: Thiazolidinediones. *N Engl J Med*, 2004, 351, s. 1106.
5 **Nissen, S. E. – Wolski, K.**: Effect of rosiglitazone on the risk of myocardial infarction and death from cardiovascular causes. *N Engl J Med*, 2007, 356, s. 2457–2471.
6 **Dormandy, J. A. – Charbonnel, B., et al.**: Secondary prevention of macrovascular events in patients with type 2 diabetes in the PROactive study (PROspective pioglitAzone Clinical Trial In macroVascular Events): a randomised controlled trial. *Lancet*, 2005, 366, s. 1279–1289.
7 **Kernan, W. N. – Viscoli, C. M., et al.**: Pioglitazone after ischemic stroke or transient ischemic attack. *N Engl J Med*, 2016, 374, s. 1321–1331.
8 **DeFronzo, R. – Banerji, M. – Bray, G., et al.**: Reduced insulin secretion/insulin resistance (disposition) index is the primary determinant of glucose intolerance in the prediabetic state: Results from ACT NOW. *Diabetes Care*, 2008, 57, s. A45.
9 **Sherifali, D. – Nerenberg, K., et al.**: The effect of oral antidiabetic agents on A1C levels. A systematic review and meta-analysis. *Diabetes Care*, 2010, 8, s. 1859–1864.
10 **Lewis, J. D. – Ferrari, A., et al.**: Risk of bladder cancer among diabetic patients treated with pioglitazone: interim report of a longitudinal cohort study. *Diabetes Care*, 2011, 34, s. 916–922.

Exenatid ER v kombinované léčbě diabetes mellitus 2. typu

MUDr. Johana Venerová Diabetologické centrum, Interní klinika 1. LF UK a ÚVN, Praha

1 *Doporučený postup péče o diabetes mellitus 2. typu*. ČDS, 2016, dostupné z: http://www.Diab.cz/standardy, vyhledáno 13. 3. 2017.

2 **Svačina, Š.**: *Antidiabetika: historie, současnost a perpektivy*. Praha, Axonite, 2016.

Diabetes s kardiovaskulárním onemocněním – co s tím?

prof. MUDr. Jiří Vítovec, CSc. I. interní kardioangiologická klinika, LF MU, FN u sv. Anny, Brno
prof. MUDr. Jindřich Špinar, CSc. Interní kardiologická klinika LF MU a FN, Brno
prof. MUDr. Lenka Špinarová, Ph.D. I. interní kardioangiologická klinika, LF MU, FN u sv. Anny, Brno

1 **Shah, A. D. – Langenberg, C. – Rapsomaniki, E., et al.**: Type 2 diabetes and incidence of cardiovascular diseases: a cohort study in 1.9 million people. *Lancet Diabetes Endocrinol*, 2015, 3, s. 105–113.

2 **Linhart, A. – Bělohlávek, J.**: Diabetes mellitus 2. typu a srdeční selhání. *Vnitř Lék*, 2016, 62, s. 592–598.

3 **Špinar, J. – Hradec, J. – Špinarová, L. – Vítovec, J.**: Summary of the 2016 ESC Guidelines on the diagnosis and treatment of acute and chronic heart failure. Prepared by the Czech Society of Cardiology. *Cor Vasa*, 2016, 58, s. e530–e568.

4 **Cubbon, R. M. – Adams, B. – Rajwani, A., et al.**: Diabetes mellitus is associated with adverse prognosis in chronic heart failure of ischaemic and non-ischaemic aetiology. *Diab Vasc Dis Res*, 2013, 10, s. 330–336.

5 **Turnbull, F. M. – Abraira, C. – Anderson, R. J., et al.**: Intensive glucose control and macrovascular outcomes in type 2 diabetes. *Diabetologia*, 2009, 52, s. 2288–2298.

6 **Škrha, J. – Pelikánová, T. – Kvapil, M., za ČDS**: Doporučený postup péče o diabetes mellitus 2. typu. *DMEV*, 2016, 19, s. 48–56.

7 **Scirica, B. M. – Braunwald, E. – Raz, I., et al.**, SAVOR-TIMI 53 Steering Committee and Investigators: Heart failure, saxagliptin, and diabetes mellitus: observations from the SAVOR-TIMI 53 randomized trial. *Circulation*, 2014, 130, s. 1579–1588.

8 **Zinman, B. – Wanner, C. – Lachin, J. M., et al.**, EMPA-REG OUTCOME Investigators: Empagliflozin, cardiovascular outcomes, and mortality in type 2 diabetes. *N Engl J Med*, 2015, 373, s. 2117–2128.

9 **Haering, H. U. – Merker, L. – Seewaldt-Becker, E., et al.**, EMPA-REG METSU Trial Investigators: Empagliflozin as add-on to metformin plus sulfonylurea in patients with type 2 diabetes: a 24-week, randomized, double-blind, placebo-controlled trial. *Diabetes Care*, 2013, 36, s. 3396–3404.

10 **Haering, H. U. – Merker, L. – Seewaldt-Becker, E., et al.**: EMPA-REG MET Trial Investigators. Empagliflozin as add-on to metformin in patients with type 2 diabetes: a 24-week, randomized, double-blind, placebo-controlled trial. *Diabetes Care*, 2014, 37, s. 1650–1659.

11 **Kovacs, C. S. – Seshiah, V. – Swallow, R., et al.**, EMPA-REG PIOTM Trial Investigators: Empagliflozin improves glycaemic and weight control as add-on therapy to pioglitazone or pioglitazone plus metformin in patients with type 2 diabetes: a 24-week, randomized, placebo-controlled trial. *Diabetes Obes Metab*, 2014, 16, s. 147–158.

12 **Roden, M. – Weng, J. – Eilbracht, J., et al.**, EMPA-REG MONO Trial Investigators: Empagliflozin monotherapy with sitagliptin as an active comparator in patients with type 2 diabetes: a randomised, double-blind, placebo-controlled, phase 3 trial. *Lancet Diabetes Endocrinol*, 2013, 1, s. 208–219.

13 **Rosenstock, J. – Jelaska, A. – Frappin, G., et al.**: EMPA-REG MDI Trial Investigators. Improved glucose control with weight loss, lower insulin doses, and no increased hypoglycemia with empagliflozin added to titrated multiple daily injections of insulin in obese inadequately controlled type 2 diabetes. *Diabetes Care*, 2014, 37, s. 1815–1823.

14 **Rosenstock, J. – Jelaska, A. – Keller, C., et al.**: Impact of empagliflozin added on to basal insulin in type 2 diabetes inadequately controlled on basal insulin: a 78-week randomized, double-blind, placebo-controlled trial. *Diabetes Obes Metab*, 2015, 17, s. 936–948.

15 **Tikkanen, I. – Narko, K. – Keller, C., et al.**: EMPA-REG BP Investigators. Empagliflozin reduces blood pressure in patients with type 2 diabetes and hypertension. *Diabetes Care*, 2015, 38, s. 420–428.

16 **Barnett, A. H. – Michal, A. – Manassie, J., et al.**, EMPA-REG RENAL Trial Investigators: Efficacy and safety of empagliflozin added to existing antidiabetes treatment in patients with type 2 diabetes and chronic kidney disease: a randomised, double-blind, placebo-controlled trial. *Lancet Diabetes Endocrinol*, 2014, 2, s. 369–384.

17 **Fitchett, D. – Zinman, B. – Wanner, C., et al.**: Heart failure outcomes with empagliflozin in patients with type 2 diabetes at high cardiovascular risk: results of the EMPA-REG OUTCOME trial. *Eur Heart J*, 2016, 37, s. 1526–1534

18 **McMurray, J. J. – Gerstein, H. C. – Holman, R. R., et al.**: Heart failure: a cardiovascular outcome in diabetes that can no longer be ignored. *Lancet Diabetes Endocrinol*, 2014, 2, s. 843–851.

19 **Cherney, D. Z. – Perlina, B. A. – Soleymanlou, N., et al.**: Renal hemodynamic effect of sodium-glucose cotransporter 2 inhibition in patients with type 1 diabetes mellitus. *Circulation*, 2014, 129, s. 587–597.

20 **Sattar, N. – McLaren, J. – Kristensen, S. L., et al.**: SGLT2 Inhibition and cardiovascular events: why did EMPA-REG Outcomes surprise and what were the likely mechanisms? *Diabetologia*, 2016, 59, s. 1333, doi:10.1007/s00125-016-3956-x.

21 **Ferrannini, E. – Muscelli, E. – Frascerra, S., et al.**: Metabolic response to sodium glucose cotransporter 2 inhibition in type 2 diabetic patients. *J Clin Invest*, 2014, 124, s. 499–508.

22 **Marso, S. P. – Daniels, G. H. – Brown-Frandsen, K., et al.**: Liraglutide and cardiovascular outcomes in type 2 diabetes. *N Eng J Med*, 2016, 375, s. 311–322.

23 Tisková zpráva: Victoza significantly reduced the risk of major cardiovascular events and death in adults with type 2 diabetes in the LEADER trial. Dostupné z: http://www.novonordisk.com/bin/getPDF.2020215.pdf, vyhledáno 10. 3. 2016.

Možnosti diagnostiky a terapie diabetické autonomní neuropatie

MUDr. Šárka Malá | MUDr. Lucie Hoskovcová | MUDr. Jan Šťovíček Interní klinika 2. LF UK a FN Motol, Praha

1 **Ziegler, D., et al.**: Diabetic cardiovascular autonomic neuropathy: prognosis, diagnosis and treatment. *Diabetes/Metab Rev*, 1994, 10, s. 339–383.

2 Data o diabetu v ČR, 2014, Diabetická asociace. Dostupné z: http://www.diabetickaasociace.cz/co-je-diabetes/data-o-diabetu-v-cr/, vyhledáno 11. 2. 2017.

3 **Maser, R. E., et al.**: Diabetic autonomic neuropathy and cardiovascular risk. Pittsburgh Epidemiology Of Diabetes Complication Study III. *Arch Intern Med*, 1990, 150, s. 1218–1222.

4 **Vinik, A. I. – Maser, R. E. – Mitchell, B. D., et al.**: Diabetic autonomic neuropathy. *Diabetes Care*, 2003, 26, s. 1553–1579.

5 **Maser, R. E. – Mitchell, B. D. – Vinik, A. I., et al.**: The association between cardiovascular autonomic neuropathy and mortality in individuals with diabetes: a meta-analysis. *Diabetes Care*, 2003, 26, s. 1895–1901.

6 **Vinik, A. I. – Ziegler, D.**: Diabetic cardiovascular autonomic neuropathy. *Circulation*, 2007, 115, s. 387–397.

7 **Spallone, V. – Ziegler, D. – Freeman, R., et al.**: Toronto Consensus Panel on Diabetic Neuropathy: Cardiovascular autonomic neuropathy in diabetes: clinical impact, assessment, diagnosis, and management. *Diabetes Metab Res Rev*, 2011, 27, s. 639–653.

8 **Oakley, I. – Emond, L.**: Diabetic cardiac autonomic neuropathy and anesthetic management: review of the literature. *AANA J*, 2011, 79, s. 473–479.

9 **Juany, C. J. – Kuok, C. H. – Kuo, T. B., et al.**: Pre-operative meassurement of heart rate variability predicts hypotension during general anesthesia. *Acta Anaesthesiol Scand*, 2006, 50, s. 542–548.

10 **Jermendy, G. Y. – Ferenczy, J. – Hernandez, E., et al**.: Day-night blood pressure variation in normotensive and hypertensive NIDDM patients with asymptomatic autonomic neuropathy. *Diabetes Res Clin Pract*, 1996, 34, s. 107–114.

11 **Gambardella, S. – Frontoni, S. – Spallone, V., et al.**: Increased left ventricular mass in normotensive diabetic patients with autonomic neuropathy. *Am J Hypertens*, 1993, 6, s. 97–102.

12 **Fakhrzadeh, H. – Yamini-Sharif, A. – Sharifi, F., et al.**: Cardiac autonomic neuropathy measured by heart rate variability and markers of subclinical atherosclerosis in early type 2 diabetes. *ISRN Endocrinology*, 2012, 168264, 7 stran, doi: 10.5402/2012/168264.

13 **Canani, L. H. – Copstein, E. – Pecis, M., et al.**: Cardiovascular autonomic neuropathy in type 2 diabetes mellitus patients with peripheral artery disease. *Diabetology & Metabolic Syndrome*, 2013, 5, s. 54, doi: 10.1186/1758-5996-5-54.

14 **Rodrigues, T. C. – Ehrlich, J. – Hunter, C. M., et al.**: Reduced heart rate variability predicts progression of coronary artery calcification in adults with type 1 diabetes and controls without diabetes. *Diabetes Technology & Therapeutics*, 2010, 12, s. 963–969, doi: 10.1089/dia.2010.0070.

15 **Oakley, I. – Emond, L.**: Diabetic cardiac autonomic neuropathy and anesthetic management: review of the literature. *AANA J*, 2011, 79, s. 473–479.

16 **Juany, C. J. – Kuok, C. H. – Kuo, T. B., et al.**: Pre-operative meassurement of heart rate variability predicts hypotension during general anesthesia. *Acta Anaesthesiol Scand*, 2006, 50, s. 542–548.

17 **Bernardi, L. – Spallone, V. – Stevens, M., et al.**: On behalf of the Toronto Consensus Panel on Diabetic Neuropathy. Investigation methods for cardiac autonomic function in human research studies. *Diabetes Metab Res Rev*, 2011, 27, s. 654–664.

18 **Lacigova, S., et al.**: Doporučený postup diagnostiky a léčby diabetické neuropatie, 2016. Dostupné z: http://www.diab.cz. http://www.diab.cz/dokumenty/standardy_neuropatie.pdf, vyhledáno 11. 2. 2017.

19 **Maser, R. E. – Lenhard, M. J.**: An overview of the effect of weight loss on cardiovascular autonomic function. *Curr Diabetes Rev*, 2007, 3, s. 204–211.

20 **Dimitropoulos, G., et al.**: Cardiac autonomic neuropathy in patients with diabetes mellitus. *World J Diabetes*, 2014, 5, s. 17–39.

21 **Arnold, A. C. – Shibao, C.**: Current concepts in orthostatic hypotension management. *Curr Hypertens Rep*, 2013, 15, s. 304–312, doi: 10.1007/s11906-013-0362-3.

22 **Bureš, J. – Šmahelová, A. – Tachecí, I., et al.**: Poruchy motility a evakuace žaludku u diabetika, současné možnosti diagnostiky a léčby. *Vnitr Lek*, 2011, 57, s. 351–355.

23 **Krishan, B. – Babu, S. – Walker, J., et al.**: Gastrointestinal complications of diabetes mellitus. *World J Diabetes*, 2013, 4, s. 51–63.

24 **Šťovíček, J. – Malá, Š. – Pipková, M.**: Gastroenterologické problémy pacientů s diabetes mellitus. *Postgraduální medicína*, 2014, 16, s. 384–388.

25 **Pastor, Z.**: Erektilní dysfunkce a diabetes mellitus. *Postgraduální medicína*, 2015, 17, s. 78–101.

26 **Galstyan, G. R. – Schwartz, Y. G. – Dubsky, S. A., et al**.: Erectile dysfunction as a manifestation of urogenital autonomic neuropathy in patients with type 1 diabetes: epidemiology, classification, pathophysiology, diagnosis and treatment options. *Diabetes mellitus*, 2014, 17, s. 126–132, doi.org/10.14341/DM20142126-132.

27 **Gandhi, P. – Rao, G.**: Detection of neuropathy using a sudomotor test in type 2 diabetes. *Degenerative Neurological and Neuromuscular Disease*, 2014, 5, s. 1–7.