A SELECTION OF TEN CURRENT READINGS ON TOPICS RELATED TO TYPE 2 DIABETES MELLITUS AVAILABLE AS FREE FULL-TEXT

Selection of readings made by A/Prof Goh Lee Gan

Reading 1 - Physical Activity to Reduce Risk of Diabetes

Jeon CY, Lokken RP, Hu FB, van Dam RM. Physical activity of moderate intensity and risk of type 2 diabetes: a systematic review. Diabetes Care 2007 Mar; 30(3):744-52.

URL: http://care.diabetesjournals.org/cgi/reprint/30/3/744

Department of Epidemiology, Harvard School of Public Health, 665 Huntington Ave., Boston, MA 02115, USA.

ABSTRACT

OBJECTIVE: To systematically evaluate the evidence for an association between physical activity of moderate intensity and risk of type 2 diabetes.

RESEARCH DESIGN AND METHODS: We searched EMBASE and Medline through March 2006 and examined reference lists of retrieved articles. We excluded studies that did not assess physical activity of moderate intensity independent of activities of vigorous intensity (more than six times the resting metabolic rate). Information on study design, participant characteristics, assessment of physical activity, and outcomes and estimates of associations were extracted independently by two investigators. We calculated summary relative risks (RRs) using a random-effects model for the highest versus the lowest reported duration of activities.

RESULTS: We identified 10 prospective cohort studies of physical activity of moderate intensity and type 2 diabetes, including a total of 301,221 participants and 9,367 incident cases. Five of these studies specifically investigated the role of walking. The summary RR of type 2 diabetes was 0.69 (95% CI 0.58-0.83) for regular participation in physical activity of moderate intensity as compared with being sedentary. Similarly, the RR was 0.70 (0.58-0.84) for regular walking (typically > or = 2.5 h/week brisk walking) as compared with almost no walking. The associations remained significant after adjustment for BMI. Similar associations were observed in men and women and in the U.S. and Europe.

CONCLUSIONS: These findings indicate that adherence to recommendations to participate in physical activities of moderate intensity such as brisk walking can substantially reduce the risk of type 2 diabetes.

Reading 2 - Obesity Treatment: Long Term Efficacy of Orlistat, Sibutramine & Rimonabant

Rucker D, Padwal R, Li SK, Curioni C, Lau DC. Long term pharmacotherapy for obesity and overweight: updated meta-analysis. BMJ. 2007 Dec 8;335(7631):1194-9.

.URL: http://www.bmj.com/cgi/reprint/335/7631/1194

Department of Medicine, University of Alberta, Edmonton, AB, Canada.

ABSTRACT

OBJECTIVE: To summarise the long term efficacy of anti-obesity drugs in reducing weight and improving health status.

DESIGN: Updated meta-analysis of randomised trials.

DATA SOURCES: Medline, Embase, the Cochrane controlled trials register, the Current Science meta-register of controlled trials, and reference lists of identified articles. All data sources were searched from December 2002 (end date of last search) to December 2006.

STUDIES REVIEWED: Double blind randomised placebo controlled trials of approved anti-obesity drugs used in adults (age over 18) for one year or longer.

RESULTS: 30 trials of one to four years' duration met the inclusion criteria: 16 orlistat (n=10 631 participants), 10 sibutramine (n=2623), and four rimonabant (n=6365). Of these, 14 trials were new and 16 had previously been identified. Attrition rates averaged 30-40%. Compared with placebo, orlistat reduced weight by 2.9 kg (95% confidence interval 2.5 kg to 3.2 kg), sibutramine by 4.2 kg (3.6 kg to 4.7 kg), and rimonabant by 4.7 kg (4.1 kg to 5.3 kg). Patients receiving active drug treatment were significantly more likely to achieve 5% and 10% weight loss thresholds. Orlistat reduced the incidence of diabetes and improved concentrations of total cholesterol and low density lipoprotein cholesterol, blood pressure, and glycaemic control in patients with diabetes but increased rates of gastrointestinal side effects and slightly lowered concentrations of high density lipoprotein. Sibutramine lowered concentrations of high density lipoprotein cholesterol and triglycerides but raised blood pressure and pulse rate. Rimonabant improved concentrations of high density lipoprotein cholesterol and triglycerides, blood pressure, and glycaemic control in patients with diabetes but increased the risk of mood disorders.

CONCLUSIONS: Orlistat, sibutramine, and rimonabant modestly reduce weight, have differing effects on cardiovascular risk profiles, and have specific adverse effects.

Reading 3 - Obesity Treatment: Place of Surgical Intervention

URL: http://eje-online.org/cgi/reprint/158/2/135

Department of Internal Medicine, Diakonessenhuis Utrecht, Bosboomstraat 1, 3582 KE Utrecht, The Netherlands.

ABSTRACT

More than half of the European population are overweight (body mass index (BMI) > 25 and < 30 kg/m2) and up to 30% are obese (BMI > or = 30 kg/m2). Being overweight and obesity are becoming endemic, particularly because of increasing nourishment and a decrease in physical exercise. Insulin resistance, type 2 diabetes, dyslipidemia, hypertension, cholelithiasis, certain forms of cancer, steatosis hepatis, gastroesophageal reflux, obstructive sleep apnea, degenerative joint disease, gout, lower back pain, and polycystic ovary syndrome are all associated with overweight and obesity. The endemic extent of overweight and obesity with its associated comorbidities has led to the development of therapies aimed at weight loss. The long-term effects of diet, exercise, and medical therapy on weight are relatively poor. With respect to durable weight reduction, bariatric surgery is the most effective long-term treatment for obesity with the greatest chances for amelioration and even resolution of obesity-associated complications. Recent evidence shows that bariatric surgery for severe obesity is associated with decreased overall mortality. However, serious complications can occur and therefore a careful selection of patients is of utmost importance. Bariatric surgery should at least be considered for all patients with a BMI of more than 40 kg/m2 and for those with a BMI of more than 35 kg/m2 with concomitant obesity-related conditions after failure of conventional treatment. The importance of weight loss and results of conventional treatment will be discussed first. Currently used operative treatments for obesity and their effectiveness and complications are described. Proposed criteria for bariatric surgery are given. Also, some attention is devoted to more basic insights that bariatric surgery has provided. Finally we deal with unsolved questions and future directions for research.

Reading 4 - Blood Pressure Lowering in High Risk Patients

Jamerson KA, Basile J. Prompt, aggressive BP lowering in high-risk patients. : J Clin Hypertens (Greenwich). 2008 Jan;10(1 Suppl 1):40-8.

URL: http://www.lejacq.com/Search_ArticleDetail.cfm?PID=JClinHypertens_10;1%20Suppl%201:40&CFID=4337441&CFTOKEN=93360786

Division of Cardiovascular Medicine, Department of Internal Medicine, University of Michigan Health Care System, Ann Arbor, MI 48109, USA. jamerson@umich.edu

ABSTRACT

Various populations with hypertension have been singled out by current treatment guidelines as requiring more specific treatment. These include patients with stage 2 hypertension, black patients, and patients with coexistent diabetes mellitus and coronary heart disease. Hypertension in these groups is often associated with higher risk of cardiovascular morbidity and mortality. This article reviews current knowledge regarding hypertension in high-risk patient populations, with a particular focus on the importance of prompt, aggressive treatment to lower blood pressure and prevent cardiovascular disease progression. Such treatment includes the early use of multiple-drug therapy with agents that have complementary blood pressure-lowering mechanisms and provide protection from target organ damage. While 2- or 3-drug antihypertensive therapy in these high-risk groups has typically included a diuretic, other combinations of agents may be indicated. Evidence suggests that therapy with a calcium channel blocker and an inhibitor of the renin-angiotensin system is one effective strategy for lowering blood pressure and improving outcomes in these populations.

Reading 5 - Insulin Glargine Has Less Hypoglycemic Risk Compared to NPH

Taylor JR, Campbell KM. Home monitoring of glucose and blood pressure. Am Fam Physician. 2007 Jul 15;76(2):255-60.

URL: http://www.aafp.org/afp/20070715/255.html (free full text)

Department of Pharmacy Practice, University of Florida College of Pharmacy, Gainesville 32610-0486, USA. jtaylor@cop.ufl.edu

ABSTRACT

Home monitoring of blood glucose and blood pressure levels can provide patients and physicians with valuable information in the management of diabetes mellitus and hypertension. Home monitoring allows patients to play an active role in their care and may improve treatment adherence and clinical outcomes. Glucose meters currently on the market produce results within 15 percent of serum blood glucose readings and offer a variety of features. Although the data are somewhat conflicting, home glucose monitoring has been associated with improved glycemic control and reduced long-term complications from diabetes. These effects are more pronounced in patients who take insulin. Home blood pressure values predict target organ damage and cardiovascular outcomes better than values obtained in the office. Home blood pressure measurements are also effective at detecting borderline hypertension and monitoring the effectiveness of antihypertensive drugs. Validated arm cuffs are the preferred blood pressure devices for home use. Information from home monitoring should always be used in conjunction with that from regular office visits and other data to make appropriate therapeutic decisions.

Reading 6 - Treatment of Painful Diabetic Neuropathy

Wong MC, Chung JW, Wong TK. Effects of treatments for symptoms of painful diabetic neuropathy: systematic review. BMJ. 2007 Jul 14;335(7610):87.

URL: http://www.bmj.com/cgi/reprint/335/7610/87

Nursing Services Division, United Christian Hospital, 130 Hip Wo Street, Hong Kong. wongmc0829@yahoo.com.hk

ABSTRACT

OBJECTIVE: To evaluate the effects of treatments for the symptoms of painful diabetic neuropathy.

DESIGN: Systematic review.

DATA SOURCES: Articles (English and full text) on double blind randomised trials found by searching with the key words anticonvulsant, antidepressant, non-steroidal anti-inflammatory drugs, tramadol, opioid, ion channel blocker, diabetic neuropathy, diabetic peripheral neuropathy, peripheral neuropathy, and neuropathy. The search included Medline, Embase, EMB reviews-AP Journal club, and the Cochrane central register of controlled trials.

STUDY SELECTION: Randomised controlled trials comparing topically applied and orally administered drugs with a placebo in adults with painful diabetic neuropathy.

DATA EXTRACTION: Data were extracted to examine quality of methods, characteristics of studies and patients, efficacy, and side effects. The primary outcome was dichotomous information for 50% or moderate reduction of pain. Secondary outcomes were 30% reduction of pain and withdrawals related to adverse events.

RESULTS: Odds ratios were calculated for achievement of 30%, 50%, or moderate pain relief and for withdrawals related to adverse effects. Twenty five reports were included and seven were excluded. The 25 included reports compared anticonvulsants (n=1270), antidepressants (94), opioids (329), ion channel blockers (173), N-methyl-D-aspartate antagonist (14), duloxetine (805), capsaicin (277), and isosorbide dinitrate spray (22) with placebo. The odds ratios in terms of 50% pain relief were 5.33 (95% confidence interval 1.77 to 16.02) for traditional anticonvulsants, 3.25 (2.27 to 4.66) for newer generation anticonvulsants, and 22.24 (5.83 to 84.75) for tricylic antidepressants. The odds ratios in terms of withdrawals related to adverse events were 1.51 (0.33 to 6.96) for traditional anticonvulsants, 2.98 (1.75 to 5.07) for newer generation anticonvulsants, and 2.32 (0.59 to 9.69) for tricylic antidepressants. Insufficient dichotomous data were available to calculate the odds ratios for ion channel blockers.

CONCLUSION: Anticonvulsants and antidepressants are still the most commonly used options to manage diabetic neuropathy. Oral tricyclic antidepressants and traditional anticonvulsants are better for short term pain relief than newer generation anticonvulsants. Evidence of the long term effects of oral antidepressants and anticonvulsants is still lacking. Further studies are needed on opioids, N-methyl-D-aspartate antagonists, and ion channel blockers.

Reading 7 - Diabetic Foot Classification That Predicts Future Complications

Lavery LA, Peters EJ, Williams JR, Murdoch DP, Hudson A, Lavery DC; International Working Group on the Diabetic Foot. Reevaluating the way we classify the diabetic foot: restructuring the diabetic foot risk classification system of the International Working Group on the Diabetic Foot. Diabetes Care. 2008 Jan;31(1):154-6.

Department of Surgery, Texas A&M Health Science Center, Scott and White Hospital, Temple, Texas, USA. llavery@swmail.sw.org

ABSTRACT

OBJECTIVE: To separately evaluate peripheral arterial occlusive disease (PAOD) and foot ulcer and amputation history in a diabetic foot risk classification to predict foot complications.

RESEARCH DESIGN AND METHODS: We evaluated 1,666 diabetic patients for 27.2 +/- 4.2 months. Patients underwent a detailed foot assessment and were followed at regular intervals. We used a modified version of the International Working Group on the Diabetic Foot's (IWGDF's) risk classification to assess complications during the follow-up period.

RESULTS: There were more ulcerations, infections, amputations, and hospitalizations as risk group increased (chi(2) for trend $P < 0.001$). When risk category 2 (neuropathy and deformity and/or PAOD) was stratified by PAOD, there were more complications in PAOD patients ($P < 0.01$). When risk group 3 patients (ulceration or amputation history) were separately stratified, there were more complications in subjects with previous amputation ($P < 0.01$).

CONCLUSIONS: We propose a new risk classification that predicts future foot complications better than that currently used by the IWGDF.

Reading 8 - DM and Impact on Resource Utilisation

Gulliford MC, Latinovic R, Charlton J. Diabetes diagnosis, resource utilization, and health outcomes. Am J Manag Care. 2008 Jan;14(1):32-8.

King's College London, Public Health Sciences, Capital House, London, UK. martin.gulliford@kcl.ac.uk

ABSTRACT

OBJECTIVE: To determine the effect of a clinical diagnosis of diabetes mellitus (DM) on healthcare utilization and health outcomes.

STUDY DESIGN: Cohort study.

METHODS: A total of 197 United Kingdom family practices with 4974 subjects (mean age, 62.8 years; 52.2% men) with type 2 DM and 9948 matched nondiabetic control subjects. Healthcare utilization and the occurrence of complications were estimated from 2 years before to 2 years after the first clinical diagnosis of DM.

RESULTS: From 24 months before the DM diagnosis, primary care consultations were increased in prediagnosis cases compared with controls (relative rate [RR], 1.31; 95% confidence interval [CI], 1.27-1.35), as were emergency

and hospital care consultations, hospital specialist referrals, and prescription drug items. At diagnosis of DM, utilization of all forms of healthcare was increased (RR, 4.27; 95% CI, 4.17-4.36 for primary care consultations; RR, 2.49; 95% CI, 2.46-2.52 for prescription drug items). In the quarter following diagnosis, healthcare utilization was increased for acute myocardial infarction (RR, 6.29; 95% CI, 2.69-14.73), cerebrovascular disease (RR, 5.14; 95% CI, 3.37-7.84), ischemic heart disease (RR, 3.65; 95% CI, 2.77-4.80), and peripheral nerve disorders (RR, 5.01; 95% CI, 2.81-8.95). First diagnoses of myocardial infarction, cerebrovascular disease, and peripheral nerve disorders were increased during the period from 6 months before to 6 months after diagnosis.

CONCLUSIONS: Clinical diagnosis of DM is often the end of a process leading to established complications and is associated with greatly increased utilization of care. This adds to the justification of strategies for earlier detection of hyperglycemic states.

Reading 9 - Different Gender Response to the Diagnosis of Diabetes

School of Nutrition, Ryerson University, 350 Victoria St, Toronto, ON M5B 2K3. egucciar@ryerson.ca

ABSTRACT

OBJECTIVE: To determine whether men and women with type 2 diabetes have different psychosocial, behavioural, and clinical characteristics at the time of their first visit to a diabetes education centre.

DESIGN: A questionnaire on psychosocial and behavioural characteristics was administered at participants' first appointments. Clinical and disease-related data were collected from their medical records. Bivariate analyses (chi(2) test, t test, and Mann-Whitney test) were conducted to examine differences between men and women on the various characteristics.

SETTING: Two diabetes education centres in the greater Toronto area in Ontario.

PARTICIPANTS: A total of 275 men and women with type 2 diabetes.

RESULTS: Women were more likely to have a family history of diabetes,previous diabetes education, and higher expectations of the benefits of self-management. Women reported higher levels of social support from their diabetes health care team than men did, and had more depressive symptoms, higher body mass, and higher levels of high-density lipoprotein cholesterol than men did.

CONCLUSION: The results of this study provide evidence that diabetes prevention, care, and education need to be targeted to men and women differently. Primary care providers should encourage men to attend diabetes self-management education sessions and emphasize the benefits of self-care. Primary care providers should promote regular diabetes screening and primary prevention to women, particularly women with a family history of diabetes or a high body mass index; emphasize the importance of weight management for those with and without diabetes; and screen diabetic women for depressive symptoms