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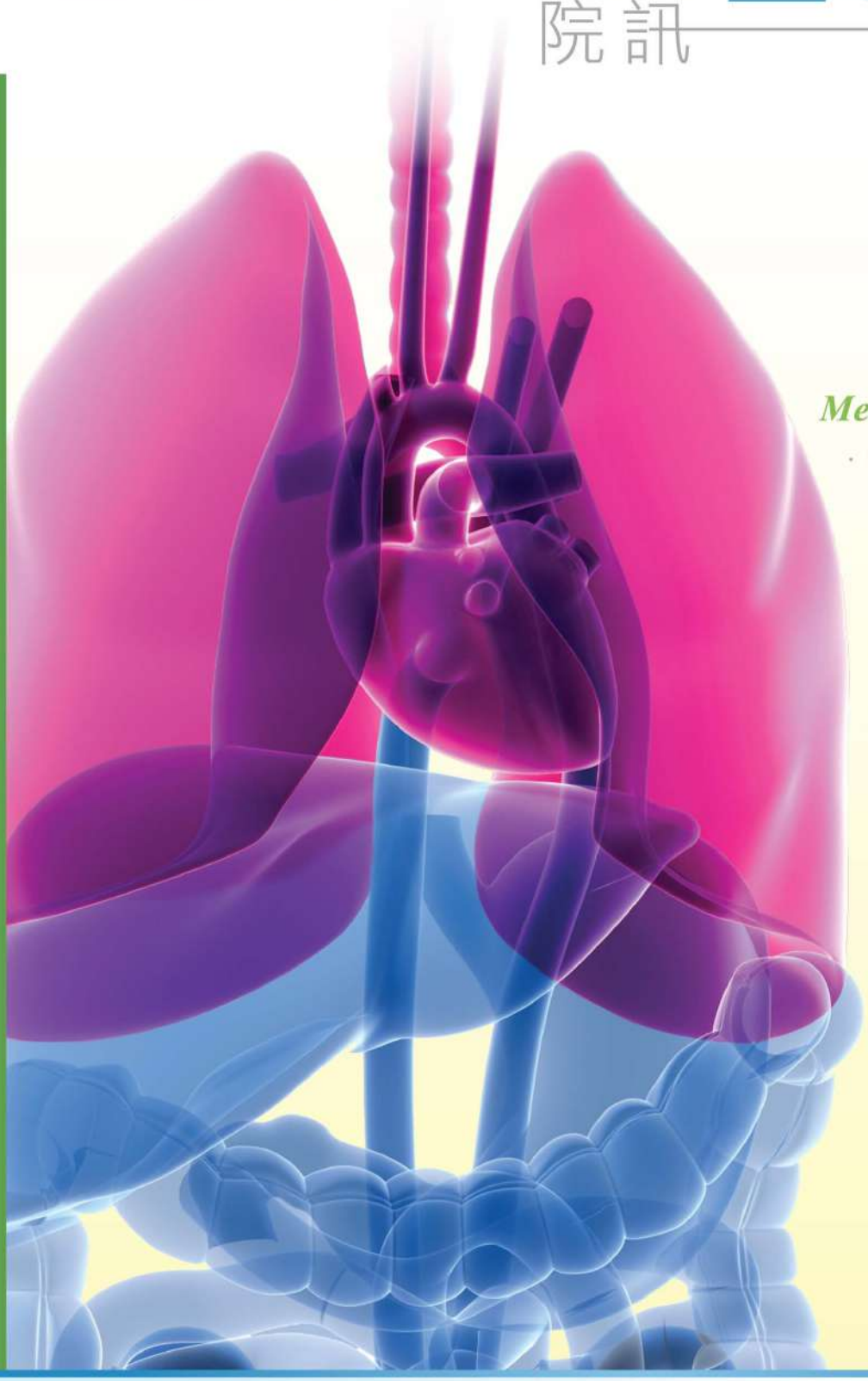
聖保祿醫院
St. Paul's Hospital

NewsLetter
院訊



Medical Article:

- Latest Technologies to Improve Pulmonary Vein Isolation
- 90% of Steroid Premedication for Contrast CT Examinations is Unnecessary

Pharmaceutical Updates

Hospital Activities:

- Christmas Dinner 2017

修女的話

告別充滿愛和歡樂的聖誕節，迎來喜氣洋洋的農曆新年。送雞迎狗，在此我先祝各位身體健康、萬事如意、主寵滿盈!

若然要為聖保祿醫院作2017年大事回顧，我相信最難忘的回憶必定是新大樓B座投入服務。我們就像參加了一場筋疲力竭而精彩的跨欄比賽，從籌備至新大樓正式運作，我們遇到各式各樣的“奇難雜症”和挑戰，有時甚至出現踏欄跌倒的情況，全賴各部門同事發揮互相協作的精神，將問題逐一擊破，完成這項艱辛的項目。特別感謝同事們在服務過渡期間，除了應付舊大樓的恆常工作外，還抽身協助安排新大樓的運作事宜，使新大樓得以在短時間內正式投入服務；無論是員工、訪院醫生、還是其他使用本院服務的客人，我衷心感激各位為醫院提供寶貴的意見，尤其是有些設施在運作初期發揮得未如理想，謝謝各位的包容和諒解，本院會繼續改善有關設施配套，以提升服務質素；我也感激參與醫院親善大使計劃的義工們，你們的慷慨付出令新大樓的運作變得更暢順；感謝天主的帶領和眷顧，感謝沙爾德聖保祿女修會的全力支持，使本院能投放更多資源以優化環境設施及增設現代化的科技及醫療設備。需要鳴謝的合作單位很多，名單未能盡錄，我謹向所有曾協助或參與新大樓發展項目的單位致以最深摯的謝意，你們付出的努力成就了2017年聖保祿醫院這個重要的里程碑。縱然在過去一年我們的服務或有不足之處，我深信只要我們能虛心學習，繼續積極用心為有需要的人提供優質的醫療服務，我們必能攜手為聖保祿醫院締造美好的歷史回憶。

歷史回憶是由大家共同創造的。大家知不知道，你們每日身處工作的聖保祿醫院已於2018年踏入第120個年頭嗎? 聖保祿醫院於1898年開始為市民提供服務，在過去的百多年裡，醫院經歷了3次變遷，從灣仔至跑馬地，到最後遷至銅鑼灣現址; 無論營運規模大小，聖保祿修女及醫院員工一直跟隨福音的啟示和我們主保聖保祿的教導，延續了基督治療的使命，關愛和照顧有需要的病人。為慶祝這個重要的日子，本院將於4月舉行一連串的慶祝活動。籌備工作正密鑼緊鼓進行，希望各方能鼎力支持，一同為聖保祿醫院創造一個難忘而豐盛的120周年紀念慶典。他日驀然回首，希望各位會記得曾與聖保祿醫院一起見證這重要時刻，也希望在聖保祿醫院服務的日子會成為各位同事的美好回憶。

最後，「我把平安留給你們；我將我的平安賜給你們；我所賜給你們的，不像世界所賜的一樣。你們心裡不要煩亂，也不要膽怯。」（若望福音14：27）希望各位在天主的祝福下，能渡過平安快樂的新一年!

主佑各位!

張柱見修女

MESSAGE
FROM THE MEDICAL SUPERINTENDENT

Dr. William Ho
Medical Superintendent

Firstly I would like to wish everybody a happy and prosperous 2018. This is going to be an auspicious year for the history of St. Paul's Hospital, for several reasons.

In 1848 which was 170 years ago, three Sisters of St. Paul de Chartres braved the treacherous voyage to come all the way from France to Hong Kong and began work here. It was just a few years after the Treaty of Nanking, meaning that Hong Kong was still little more than a backward fishing port. Without knowing the language and environment, the Sisters must have endured extreme hardship, while responding to the sacred call to preach and take care of the needy. They were soon overwhelmed by orphans, often abandoned girls or children born with defects who were left at their doors.

In 1898 which was 120 years ago, the Sisters began providing healthcare services in Wanchai, next to the orphanage and Chapel. As activities grew, they had to find a new premise. An opportunity came when a cotton factory in Causeway Bay was up for sale. After acquisition and renovation, St. Paul's Hospital at the current site was formally established in 1918, 100 years ago. Those who wonder why the street behind our hospital is called Cotton Path will now know the reason. The only surviving cotton factory building is our current Block C, which has indeed served us well for a century. Until the recent move, we were still using Block C for such heavy duty functions as the Operating Theatres and ICU.

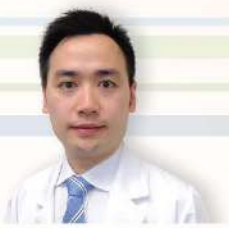
From the old photos, we can see how quiet and tranquil the place was, a far cry from the hustle and bustle of the Causeway Bay we see today. Our first Medical Superintendent Sir Albert Rodrigues and his family used to live on the top floor of a building that occupied the current site of our Block A. They have a garden on the roof that overlooked the harbour, as Victoria Park was not yet built. The busiest part of the hospital was surely the Maternity Pavilion. Decades on, that would give way to a New Wing, opened in 1976 by then Governor Sir Murray MacLehose.

Sir Albert Rodrigues and family on rooftop of their residence in SPH

From 2006, the hospital began to embark on a multi-phase redevelopment. A new Block A commenced operation in 2009 to serve as a decanting phase for clinical functions, to allow demolition of the New Wing. A much larger Block B arose from its site, which was formally put into operation in April last year.

Thus the hospital is celebrating 120 years of medical services, the centenary of SPH in Causeway Bay, and grand opening of Block B this coming April. What follows will be further work to renovate Block A for other functions, and creation of a garden with water feature after demolition of Block C. This will give an unimpeded view of the beautiful Christ the King Chapel from Tung Lo Wan Road, flanked by the two magnificent blocks of the hospital.

We owe all these achievements to the Grace of God, the vision and passion of St. Paul's Sisters to serve the community here, and countless generations of dedicated professionals and staff members to offer our best to those in need. Different times present different challenges, and we strive to continuously improve our services and ourselves to follow the footsteps of St. Paul, and live out our motto: We Serve and We Care.



Dr. Yuen Ho Chuen
Specialist in Cardiology
St. Paul's Hospital

Latest Technologies to Improve Pulmonary Vein Isolation

Introduction

Thanks to the early work of Haïssaguerre, pulmonary vein (PV) was identified as a source of ectopic activity initiating atrial fibrillation (AF). PVs have muscular sleeves which extend into the left atrium and special cells (P cells, transitional cells, and Purkinje cells) are found in these muscular extensions in histopathological observations. This forms the basis for pulmonary vein isolation (PVI) as an ablation strategy for AF. Electrical isolation of PVs by catheter ablation significantly reduces the burden of AF as compared to anti-arrhythmic drugs. PVI is now the mainstay of catheter-based therapy for paroxysmal AF. For persistent AF, additional ablation is thought to be necessary because of other predisposing substrates in perpetuation of AF in addition to PV trigger. Different ablation strategies have been tried to improve the success rate in persistent AF. However, the recent STAR AF 2 trial showed that PVI alone was as effective as PVI with additional complex electrogram ablation or linear ablation.

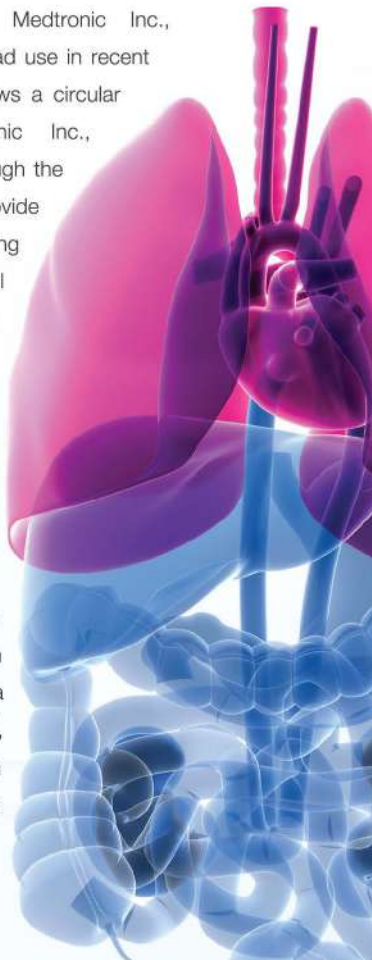
In the past, the only available technology for PVI involved a focal radiofrequency (RF) catheter, making circumferential lesions around PV antrum in a point-to-point fashion. It is time-consuming and technically demanding to achieve a truly contiguous lesion set even with the advent of three-dimensional electroanatomical mapping systems and steerable sheaths. Effective lesion formation requires good catheter contact but catheter contact cannot be accurately assessed by tactile feedback alone even in experienced hands. Contact force (CF)-sensing technology has been developed to give clear guidance for catheter contact and lesion formation. In response to the urge for faster and more user-friendly ablation tools for PVI, balloon- based catheters with the use of other energy sources (cryoballoon) have been developed as a single-shot device to meet this need.

Contact Force

The occurrence of PV reconnection is considered to be due to failure to create transmural RF lesions. The electrode-tissue contact of the ablation catheter tip has been shown to be an important factor in determining the RF lesion size. CF-sensing technology might be the solution to ensure catheter contact. There are now two commercially available CF-sensing RF catheters in the market: TactiCath (St. Jude Medical Inc., St. Paul, MN) and ThermoCool SmartTouch (Biosense Webster Inc., Diamond Bar, CA) (Figure 1). The feasibility and efficacy of CF monitoring during AF ablation have been demonstrated in recent clinical trials. The EFFICAS I trial showed minimum CF and minimum force-time integral (FTI) were strong predictors of gap formation. A catheter CF of 20 g with a minimum of 400 g/s FTI should be the optimal CF parameter recommendation. The use of CF with the above recommendation was associated with more durable PVI as shown in EFFICAS II trial. 85% of PVs remained isolated at 3 months in EFFICAS II in which CF parameter recommendation was used while only 72% of PVs were kept isolated in EFFICAS I in which CF parameter recommendation was not used. TOCCASTAR study, a prospective, multicenter, randomized, controlled trial, randomized 300 patients with paroxysmal AF to RF with either a CF-sensing catheter or a non-CF catheter (control) (1). Effectiveness was similar between 2 groups with freedom from AF at 12 months being 67.8% in the CF group and 69.4% in the control group (P = 0.0073 for non-inferiority). When the CF arm was stratified into optimal CF (>= 90% ablations with >= 10 g) and non-optimal CF groups, freedom from AF at 12 months was achieved in 75.9% versus 58.1%, respectively (P = 0.018). For the safety aspect, similar device-related serious adverse events occurred in the CF and control groups (P = 0.0004 for non-inferiority) with 1 cardiac perforation in each group. Achieving optimal CF with a CF-sensing catheter seems to be the way to go in order to achieve permanent PVI with RF catheter.

Cryoballoon

Point-to-point movement of the focal ablation catheter requires high level of manual skills and is time-consuming. Given the approximately circular shape of the PV ostia, more recent ablation platforms have logically been built with circumferential energy delivery. Among all the single-shot PV isolation tools, the cryoballoon (CB) (Arctic Front, Medtronic Inc., Minneapolis, MN) has achieved widespread use in recent years. The CB ablation system also allows a circular mapping catheter (Achieve, Medtronic Inc., Minneapolis, MN) which is deployed through the CB catheter guidewire lumen to provide recording of real-time PV potentials during cryoablation (3) (Figure 2). Cryothermal energy is demonstrated to create more favorable lesions with less thrombus formation and preserved underlying cellular matrix and tensile strength when compared to RF (2). The novel CB system was first shown to be effective for isolating PVs in dogs in 2005 (4). CB was then tested in humans and the treatment success of CB was significantly better than antiarrhythmic drugs in patients with paroxysmal AF in STOP AF study, a prospective, multicenter, randomized, controlled trial (5). In this study, freedom from AF at 12 months was



69.9% in cryoablation patients compared with only 7.3% in patients on anti-arrhythmic drugs (P < 0.001). In a meta-analysis of CB ablation including 519 participants with paroxysmal AF in 5 studies, the 1-year freedom from recurrent AF with 3-month blanking period was 72.83% (6). In a single center prospective randomized trial FreezeAF study comparing CB with irrigated-tip RF catheter, CB ablation showed similar efficacy in achieving freedom from AF at 1 year (multiple procedure success, 73.6% in CB group vs 70.7% in RF group, P <0.001 for non-inferiority) (7). As expected for a single-shot device, CB ablation required shorter procedural time (median 161 min) when compared to RF catheter (median 174 min, P = 0.006) (6). A steep learning curve for CB ablation was demonstrated in different centers with progressively shorter procedural and fluoroscopy time as the number of cases performed increased (8, 9).

In the first generation CB, one of the technical limitations is a temperature gradient from the equator to the distal pole of the balloon with less effective cooling around the balloon nose. This area is typically in contact with the lower circumference of the inferior PVs where conduction gaps were preferentially found during repeat procedures (10). With this design of first generation CB, the ability to complete PVI without touch-up lesions by focal ablation catheter ranged from 40% to 92% (5, 11, 12). This limitation has been overcome in the development of second generation CB (Arctic Front Advance, Medtronic Inc., Minneapolis, MN). Second generation CB has a more homogenous cooling of the frontal balloon hemisphere because of repositioning and doubling the number of injection ports and increasing the refrigerant flow in the larger 28 mm balloon. In a high volume Germany center, second generation CB attained high rate of acute PVI with fewer balloon applications, no requirement of focal touch-up, and shorter procedural time when compared to first generation CB (13). In the SUPIR study by Reddy et al, a second PV remapping procedure at 3 months after PVI by second generation CB in 21 patients revealed that 91% of veins remained electrically isolated (14). Non-randomized outcome studies showed the 1-year treatment success was significantly better in second generation CB group when compared to first generation CB group (15, 16). The rate of freedom from AF without anti-arrhythmic drugs at 1 year was higher than 80% in second generation CB group (15, 16). In order to achieve an even lower PV reconnection and AF recurrence rate, predictors for durable PVI were studied in patients undergoing a repeat procedure for AF recurrence after second generation CB ablation (17). It showed that faster time to isolation and achievement of -40°C within 60s independently predicted durable PVI. In addition, 60-s cutoff for time to PVI indicated persistent isolation with 96.4% negative predictive value.

Randomized studies comparing second generation CB with RF catheter are lacking but one non-randomized study showed better efficacy for second generation CB when compared to RF. This multicenter, retrospective, non-randomized study comparing the clinical outcomes of 1196 patients (76% with paroxysmal AF) undergoing PVI using second generation CB and open-irrigated, non-CF sensing RF showed that second generation CB had greater freedom from atrial arrhythmias at 12 months following a single procedure without anti-arrhythmic drugs (76.6% in second generation CB vs 60.4% in RF, P < 0.001) (18). With the advent of CF-sensing RF catheter and evidence of better outcome with optimal CF during procedure, it would be interesting to see if second generation CB could outperform CF-sensing RF catheter. In a recent multicenter non-randomized study comparing second generation CB and CF-sensing RF catheter, the single procedure freedom from any atrial arrhythmias at 18 months was comparable in both groups (73.3% vs 76% respectively, P = 0.63) (19).

One of the major concerns in CB ablation is the higher rate of phrenic nerve injury during right-sided PV ablation when compared to RF. Rate of phrenic nerve palsy was found to be quite high (11.2%) in cryoablation patients in STOP AF trial although most of them resolved within 12 months (5). Different methods have been developed to minimize the risk of phrenic nerve injury. The most promising one seems to be phrenic nerve monitoring by recording diaphragmatic compound motor action potentials (CMAP) described by Franceschi (20). In this study, cessation of CB ablation when there was 30% reduction of CMAP amplitude could successfully prevent phrenic nerve palsy.

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90% of Steroid Premedication for Contrast CT Examinations is Unnecessary

Background

In the past decades, before contrast CT examinations, majority of local radiologists and clinicians would routinely pre-medicate patients with any atopic histories, asthma, food and drug allergy, regardless of the severity of the prior allergic reactions. If patients with such allergic histories were about to undergo contrast CT examination and had not been pre-medicated with oral corticosteroid by referring clinicians, would often receive a single dose of intravenous hydrocortisone by the attending radiologist as premedication. Little did we know about the efficacy nor potential risks of such practice.

Myth of Shellfish allergy

While shellfish contain iodine, iodine is not the source of people's allergy. Major allergens in shellfish are tropomyosins, proteins important in muscle contraction and unrelated to iodine. Anaphylactoid reactions to iodinated contrast media are primarily caused by the contrast molecule and not the iodine/iodide. A significant number of health care providers continue to inquire specifically into a patient's history of seafood allergy. There is, however, no evidence to support the continuation of this practice.

Latest Recommendations

According to American College of Radiology, premedication does not prevent all reactions, has not been confirmed to reduce the incidence of moderate or severe reactions or reaction-related deaths, has limited supporting efficacy in high-risk patients, and is accompanied by direct and indirect harms, the utility of premedication in high-risk patients is uncertain. Routine premedication or avoidance of contrast medium from indications such as shellfish, MRI contrast media, asthma, seasonal allergies or multiple drug and food allergies is not recommended. **The only situation of steroid premedication would be to patients with prior moderate allergic-like contrast reaction to iodinated contrast.** Oral steroid premedication is preferred to intravenous form. If the prior contrast reaction was severe, we recommend alternative such as plain CT, plain or contrast enhanced MRI or ultrasound examinations. The Royal College of

Radiologists commented that asthmatics do have increased risk of severe contrast reactions by a factor of six with low or iso-osmolar non-ionic contrast. So if contrast injection is deemed necessary and asthma is well controlled, leave the cannula in place and observe the patient for 30 minutes after the procedure. If the patient is wheezy or reports that their asthma is not well controlled, and the examination is not urgent, it should be deferred and the patient referred back for medical therapy.

Risks of Steroid Premedication

Direct risks of premedication are small and include transient leukocytosis, transient (24-48hr) and usually asymptomatic hyperglycemia, a questionable infection risk. The largest risk of premedication is indirect and related to delay in diagnosis imparted by multi-hour premedication.

Oral Steroid Premedication Regime

Hospital Authority (2002) recommended 12 hours and 2 hours prior to intravascular ionic contrast, 40mg prednisolone or 32mg methyl-prednisolone per oral dose.

Conclusion

Following discussion with referring clinicians on Staff Doctors Meeting dated 14 December 2017, new steroid premedication policy in our radiology department is implemented, in line with the international standards. It is believed that there will be reduction in number of unnecessary steroid premedication in patients with prior allergic history undergoing contrast CT examination.

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Pharmaceutical Update

The following drugs are approved for use in St. Paul's Hospital (SPH) following Drug and Therapeutics Committee meeting in October and December 2017:

Drugs	Indication	Usual dosage	Remarks
Physiogel Calming Relief AI Restoring Lipid Balm	Moisturizer for very dry skin, including skin prone to atopic dermatitis.	Used as needed.	-
Visanne (Dienogest) 2mg tablet	Treatment of endometriosis.	2mg once daily	-
Linzess (linaclotide) 290mcg capsule	Symptomatic treatment of moderate to severe irritable bowel syndrome with constipation.	290mg once daily, at least 30 minutes before a meal.	-
ProQuad (Measles, mumps, rubella and varicella) vaccine	Simultaneous vaccination against measles, mumps, rubella and varicella in individuals from 12 months of age.	2 doses with at least one month apart, or follow Hong Kong Childhood Immunisation Programme recommended by Centre for Health Protection (CHP) of the Department of Health (DH).	SPH also stocks the other brand, Priorix Tetra. ProQuad and Priorix Tetra are inter-changeable.
BFluid injection 1000mL	Peripheral Parenteral Nutrition (PPN) for patients with mild hypoproteinemia or mild malnutrition due to inadequate oral intake, and before and after surgery.	500mL per dose over 120 minutes, with maximum daily dose of 2500mL.	Order on request only.
Nocdurna (desmopressin) 25mcg & 50mcg oral lypophilisate	For symptomatic of nocturia due to idiopathic nocturnal polyuria in adults.	Gender-specific lowest effective dose of all adult irrespective of age: Women: 25mcg daily sublingually without water Men: 50mcg daily sublingually without water	Fluid intake should be limited 1 hour prior to dose until the next morning, or at least 8 hours after administration.
Vemlidy (Tenofovir) 25mg tablet	For treatment of chronic hepatitis B (HBV) infection in adults.	25mg daily with food.	Order on request only.
Budenofalk (Budesonide) 2mg/dose rectal foam	For treatment of active ulcerative colitis limited to the rectum and sigmoid colon.	2mg daily	-
Targin prolonged-release (Oxycodone/naloxone) 10mg/5mg tablet	Severe pain which can only be adequately controlled by opioid analgesic.	10mg/5mg every 12 hours, max. 80mg/40mg daily.	Targin is a Dangerous Drug (DD). Naloxone is added to counteract opioid-induced constipation by blocking the action of oxycodone at opioid receptors locally in the gut.

Time to Change the Type 2 Diabetes Mellitus Treatment Paradigm?

SPH Pharmacy Department

Introduction

Metformin is a well-established first-line therapy for the treatment of type 2 diabetes mellitus (T2DM). Other antidiabetic agents including sulfonylureas, thiazolidinediones (TZD), dipeptidyl peptidase-4 (DPP-4) inhibitors, glucagon-like peptide-1 receptor agonists (GLP-1 RAs), sodium-glucose co-transporter-2 (SGLT2) inhibitors are recommended as adjunctive therapy by guidelines from the American Diabetes Association.[1] However, evidence supporting the efficacy of GLP-1 RAs is growing, challenging the role of metformin as first-line therapy. In two articles published in August 2017, Abdul-Ghani and DeFronzo argue that GLP-1 RAs should replace metformin as first-line treatment[2], while Inzucchi defends metformin's place in therapy.[3] In light of the emergence of evidence supporting the use of both classes, this review will discuss the pharmacological actions, efficacy and safety of biguanides and GLP-1 RAs, including liraglutide, exenatide and lixisenatide.

Pharmacological actions

Eight pathophysiological disturbances are known to be associated with the manifestation of hyperglycemia in T2DM, commonly known as the Ominous Octet[4]; while the advancement of T2DM is associated with progressive pancreatic β-cell dysfunction.[5] Metformin exerts its antihyperglycemic effects mainly through inhibiting hepatic gluconeogenesis and thus reducing hepatic glucose production. On the other hand, GLP-1 RAs possess a wider range of actions, targeting six out of eight factors in the Octet (Fig. 1).[2]

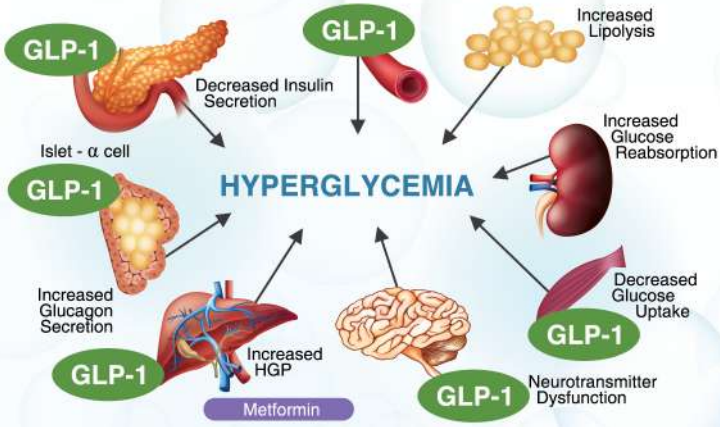

Figure 1 | The Ominous Octet in the manifestation of hyperglycemia in T2DM.[2]

Furthermore, GLP-1 RAs were shown to restore β-cell function by improving β-cell sensitivity to glucose and facilitating β-cell proliferation.[6] Nevertheless, in vitro studies also revealed metformin's ability in reducing cell death in pancreatic islets.[7]

Efficacy on glycemic control

Metformin has a long-standing reputation for its efficacy in lowering hemoglobin A_{1C} (HbA_{1C}) and improving glycemic control, which earned its status as first-line therapy recommended by various clinical guidelines. A meta-analysis demonstrated significantly lower HbA_{1C} levels with metformin monotherapy compared to sulfonylurea, TZD, DPP-4 inhibitor or α-glucosidase inhibitor monotherapies.[8] Metformin also produced a notable reduction in fasting blood glucose levels after three months of treatment (15.5 mmol/L vs 10.8 mmol/L; $p<0.0002$).[9]

Similarly, liraglutide has documented efficacy in lowering HbA_{1C}. A daily subcutaneous injection of liraglutide 0.65 mg for 14 weeks as monotherapy reduced HbA_{1C} by 1.27% compared to placebo (95% CI −1.72 to −0.82; $p<0.0001$).[10] Fasting blood glucose was reduced by 2.7 mmol/L (95% CI −3.7 to −1.7; $p<0.0001$).[10] Exenatide given weekly produced sustained improvements in glycemic control as well.[11] Lixisenatide was also shown to improve glucose tolerance and reduce HbA_{1C} levels compared to placebo.[12] It should be noted that there are no head-to-head trials comparing the HbA_{1C} and blood glucose lowering abilities of metformin and liraglutide as monotherapy. Data for other GLP-1 RAs as monotherapy in comparison to metformin is also scarce, where most trials studied the efficacy of GLP-1 RAs as adjunctive therapy to metformin. Abdul-Ghani's proposal of replacing metformin with GLP-1 RAs as first-line therapy is mainly based on the wider range of actions of GLP-1 RAs, rather than the efficacy in glycemic control.[2]

Efficacy on cardiovascular outcomes

Cardiovascular (CV) benefits of metformin were shown in the UK Prospective Diabetes Study (UKPDS), where the study population consisted of obese, newly diagnosed T2DM patients. When compared to diet therapy alone, metformin resulted in lower incidences of myocardial infarction (HR=0.61; 95% CI 0.41 to 0.89), diabetes-related death (HR=0.58; 95% CI 0.37 to 0.91), and all-cause mortality (HR=0.64; 95% CI 0.45 to 0.91).[13]

The cardiovascular benefits of liraglutide were mainly supported by the Liraglutide Effect and Action in Diabetes: Evaluation of Cardiovascular Outcome Results (LEADER) trial. In T2DM patients with high cardiovascular risk, liraglutide reduced the primary composite outcome of death from cardiovascular causes, non-fatal myocardial infarction or non-fatal stroke compared to placebo (HR=0.87; 95% CI 0.78 to 0.97).[14] The Food and Drug Administration (FDA) in the United States has recently approved a new indication for Victoza® (liraglutide): to reduce the risk of cardiovascular death,

non-fatal myocardial infarction or non-fatal stroke in adults with T2DM and established CV disease.[15] There is inadequate data demonstrating reduction in CV events for other GLP-1 RAs.

Again, head-to-head studies comparing the impact of metformin and GLP-1 RAs on cardiovascular outcomes are lacking. Until further evidence comes to light, the comparative efficacy of biguanides and GLP-1 RAs remains uncertain.

Efficacy on weight loss

In T2DM patients, weight loss improves glycemic control and reduces the need of glucose-lowering medications.[1] Metformin induced weight loss of 2.7 kg in prediabetic patients compared with a loss of 0.43 kg in the placebo group after treatment of one year ($p<0.001$).[16] There is limited documentation of weight loss in diabetic patients. In a meta-analysis of trials with diabetic patients receiving GLP-1 RAs for at least 20 weeks, weight loss of –2.8 kg (95% CI –3.4 to –2.3) was recorded.[17] However, it should be noted that most trials recruited patients who were inadequately controlled with metformin. Therefore, no definitive conclusion regarding weight loss for these two classes could be drawn at this juncture.

Safety

Metformin is generally well-tolerated, with mild side effects of diarrhea, nausea, vomiting and abdominal cramping. These gastrointestinal (GI) side effects are typically self-limited and lessened with the use of extended-release formulations.[18] Metformin may also be associated with vitamin B12 deficiency and vitamin B12 levels monitoring could be considered in patients with anemia or peripheral neuropathy.[1]

Metformin is contraindicated in severe renal impairment, i.e. estimated glomerular filtration rate (eGFR) of less than 30 mL/min/1.73m^2, and acute or chronic metabolic acidosis with or without coma. A rare risk of lactic acidosis exists but a previous systematic review concluded that metformin is unlikely to measurably increase the risk in patients with eGFR 30-60 mL/min/1.73m^2, provided that renal function is stable and the patient is closely monitored.[19]

Likewise, GLP-1 RAs are associated with mild GI side effects of nausea, vomiting and diarrhea. These GI side effects are self-limited as well, usually subsiding in four to six weeks after initiation.[2] Cases of acute pancreatitis were reported with exenatide.[20] Yet another study revealed no difference in the rates of acute pancreatitis diagnosis between patients treated with exenatide, sitagliptin and other antidiabetic agents.[21]

In addition, GLP-1 RAs were shown to increase the risk of C-cell hyperplasia and medullary thyroid tumors in animals.[1] A once-daily injection of liraglutide increased the rate of C-cell abnormalities in mice and rats; some male rats developed C-cell carcinomas.[22] Exenatide was related to a considerably higher risk of thyroid carcinomas compared to other antidiabetic agents in patients with T2DM (OR=4.73; $p=0.0004$).[23] Nevertheless, the overall risks are still low.

Post-marketing data for metformin is abundant. On the other hand, GLP-1 RAs is a relatively newer class and less extensively used compared to metformin as they are injectables; more data may be required to substantiate its long-term safety.

Administration and cost issues

Metformin is administered orally. Immediate release and extended release formulations are available, allowing multiple daily dosing or once daily dosing. Liraglutide and lixisenatide are given as a once daily subcutaneous injection. Immediate-release exenatide is administered subcutaneously twice daily, while the extended-release formulation is injected once weekly. The oral route is generally preferred by patients. Subcutaneous administration requires cold chain handling and refined injection techniques and may pose a challenge to some patients. However, the parenteral route offers an alternative for patients who are nil by mouth.

Generic metformin is available, while GLP-1 RAs are still under patent, and thus the medication costs are much higher. However, other than direct drug costs, costs pertaining to patient outcomes, such as that for treatment of diabetic complications, should be taken into account as well. Detailed cost analysis should be carried out before arriving to a conclusion of which is a less costly option.

Summary

At present, there is a lack of convincing evidence comparing metformin and GLP-1 RAs in terms of efficacy, safety and cost. Head-to-head trials and cost analysis are warranted before replacing metformin with GLP-1 RAs as first-line therapy for T2DM management. Nonetheless, with the provision of more data, the standard treatment paradigm today is undoubtedly subject to change.

Characteristics of GLP-1 RA products currently available at SPH are outlined in Table 1.

Table 1. Characteristics of GLP-1 RAs

	Liraglutide [15]	Exenatide [24,#]	Lixisenatide [25]
Product currently available at SPH	VICTOZA IN PRE-FILLED PEN 0.6MG/0.1ML [3ML]	BYDUREON <PROLONGED-RELEASE> PRE-FILLED PEN 2MG	LYXUMIA IN PRE-FILLED PEN 20MCG/0.2ML [14DOSES]
Administration	· Administer at any time of day, independently of meals · Inject in the abdomen, thigh or upper arm	· Inject in the abdomen, thigh or upper arm	· Administer within the hour prior to any meal of the day · Inject in the abdomen, thigh or upper arm
Dosing	0.6-1.8 mg daily subcutaneously	2 mg weekly subcutaneously	10-20 mcg daily subcutaneously
Renal dosage adjustments	Nil	Avoid if CrCl is less than 30 mL/min or in end-stage renal disease	Avoid if CrCl is less than 30 mL/min or in end-stage renal disease
Contraindications	· Patients with a personal or family history of medullary thyroid carcinoma (MTC) or in patients with Multiple Endocrine Neoplasia syndrome type 2 (MEN 2) · Hypersensitivity to liraglutide or any of the product components	· Patients with a personal or family history of medullary thyroid carcinoma (MTC) or in patients with Multiple Endocrine Neoplasia syndrome type 2 (MEN 2) · Hypersensitivity to exenatide or any of the product components	Hypersensitivity to lixisenatide or any of the product components
Remarks	-	An extended-release microsphere formulation; with initial period of release of surface-bound exenatide, followed by gradual release from microspheres	-

Byetta® (exenatide) is also available upon request.
Note: stock availability is subject to change. Please contact the Pharmacy Department for enquiries.

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INTRODUCTION
OF NEW FACES

Hi all, I am Wong Shun, newly joined pathologist in St. Paul's Hospital. I have worked in Princess Margaret Hospital for the past 16 years, ever since I graduated from CUHK. Leaving the comfort zone and the place where I have grown to be an independent practitioner is not an easy decision. But I am glad to have taken the plunge and this proves to be a good milestone in my career. This is so far an eye-opening experience. Working alongside a team of experienced pathologists is another bonus. You may not see me around much as I am almost overwhelmed behind my microscope. But I do find some time to set up a small decent Lo-Fi system in my room and enjoy the music along with the endless cases. If so happen you are one of those Hi Fi fans, feel free to drop by and we can share some good time.

Dr. Wong Shun
Staff Consultant Pathologist

Hi everyone, I'm Ng Yiu Ping, Angela. It's my great pleasure to join the family of St. Paul's Hospital as a Specialist in Respiratory Medicine. I graduated from the Chinese University of Hong Kong in 2005 and have my training in Tuen Mun Hospital and Pok Oi Hospital. I have special interest in intervention pulmonology that I received my overseas training on EBUS and pleuroscopy in Tokyo National Cancer Center and GuangZhou the First Affiliated Hospital of Sun Yat-Sen University. I hope I can apply what I learned to help my patients. And I am looking forward to work with all of you in St Paul's Hospital.

Dr. Ng Yiu Ping
Staff Consultant in Respiratory Medicine

Hello everyone, I am John Shum. It is my pleasure to join St. Paul's family. I feel at home working with my ex-colleagues, classmates and many other new friends here. I worked 4 years in Hong Kong Baptist Hospital as a Consultant Radiologist. Before that, I worked in Pamela Youde Nethersole Eastern Hospital as an Associate Consultant. My subspecialty interests include interventional radiology, breast, musculoskeletal and neuroradiology. I was the designated musculoskeletal radiologist of Hong Kong Sports Institute (HKSI) elite athletes during my days in Baptist. Advanced MRI brain and spine imaging is my research interest. I look forward to participate in different research projects in radiology. I will try my best to improve the safety of patients and workflow of the department.

Dr. Shum Sing Fai, John
Staff Consultant Radiologist

CME
ANNOUNCEMENT

CME/CPD/CNE Programme 2018

How to Manage the Dissatisfied Patient

Speaker: **Dr. John Hickey**
Director of the Board of The MPLC
(MPLC is an underwriting intermediary specializing in underwriting Medical Malpractice liability risks on behalf of Marsh Shield insurer - Pembroke Syndicate 4000 at Lloyd's of London)

Chairman: **Dr. Lo Hak Keung, Alex**
Head, SPH Urology Centre, Staff Consultant Urologist

Date: **2 March 2018 (Friday)**

Time:

12:45 pm – 1:00 pm	Reception (light refreshment provided)
1:00 pm – 2:00 pm	"How to Manage the Dissatisfied Patient" by Dr. John Hickey
2:00 pm – 2:15 pm	Q&A session

Venue: **Meeting Room, 2/F, Block B, St. Paul's Hospital**

CME/CPD/CNE Programme 2018

Management of Lung Cancer

Speakers: **Dr. Ng Yiu Ping, Angela**
Staff Consultant in Respiratory Medicine, St. Paul's Hospital

Dr. Tse Yiu Cheong, Adrian
Consultant Clinical Oncologist, Hong Kong Integrated Oncology Centre

Chairman: **Dr. Ng Yiu Ping, Angela**
Staff Consultant in Respiratory Medicine, St. Paul's Hospital

Date: **8 March 2018 (Thursday)**

Time:

6:45 pm – 7:15 pm	Reception (light refreshment provided)
7:15 pm – 8:00 pm	"Evaluation of Lung Shadow" by Dr. Ng Yiu Ping, Angela
8:00 pm – 8:45 pm	"Treatment Update for Lung Cancer" by Tse Yiu Cheong, Adrian
8:45 pm – 9:00 pm	Q&A session

Sponsored by: MSD

Venue: **Meeting Room, 2/F, Block B, St. Paul's Hospital**

Registration & Enquiry:
(First-come-first-serve)

Contact Person: Ms. Merrillin Leung
Tel: 2830 8857 , Fax: 2837 5271 , E-mail: sph.sdd@mail.stpaul.org.hk

CME / CPD / CNE Accreditation for all Colleges (Pending approval)

二零一七年
聖保祿醫院聖誕聯歡晚宴

2017年聖保祿醫院聖誕聯歡晚宴於12月12及13日一連兩晚假座銅鑼灣富豪酒店舉行，共延開79席。出席的神父、修女、醫生及各部門的同事接近一千人，大家聚首一堂共度聖誕佳節。

今年首先由「聖保祿合唱團」揭開晚宴序幕，為我們獻上悠揚聖誕樂韻。接著是向於醫院服務超過十年、二十年及三十年的同事頒發長期服務獎，感謝他們多年來為醫院作出貢獻，與醫院共同成長，見證醫院不同階段的發展。

晚宴於神父領禱後正式開始。打響頭炮的是令全場氣氛升溫枱獎環節，接著是獎品豐富，萬眾期待的幸運大抽獎。每年的表演環節均是焦點所在，醫院很榮幸再次邀得方津生醫生及黃亭亭醫生為晚宴作表演嘉賓，更獲劉業光醫生及謝啟聰醫生伴奏，演唱Ave Maria及O Holy Night，全場嘉賓均陶醉在曼妙歌聲中。

遊戲節目是晚宴另一重頭戲。今年遊戲為考考各嘉賓對新B座大樓的認識而特別設計，以猜中新大樓某一角落放大的照片為之得獎。除考眼力外，也考大家對不同部門的認識。同事們當然不負眾望，猜對所有題目，贏取精美禮品。隨著幸運大抽獎所有幸運兒誕生後，晚宴已進入尾聲，眾嘉賓均盡興而歸，所有節目於歡笑聲中圓滿結束。