

Personal experiences of émigré cardiologist: Patrick T. Siegrist, MD

A Swiss cardiologist rises to the challenge in the land of the rising sun

Patrick Siegrist MD was born in Switzerland and qualified as a cardiologist at the University of Zurich. He is currently working in the Department of Advanced Cardiovascular Therapeutics at Osaka University, Japan, as a specially appointed fellow in interventional cardiology. His project areas include imaging-guided percutaneous coronary intervention and chronic total occlusion.



While many post-doctorates seek overseas fellowships, few will go as far as Siegrist to broaden their personal and professional horizons. Despite having no family or professional links to Japan, Siegrist had a fascination for the Japanese language and culture as a result of an earlier visit. He also knew that Japan had an abundance of world-renowned medical centres performing high-level research, as well as advanced medical engineering and device companies, making it an ideal place for an aspiring cardiologist.

Finding an opening was not easy, however, and Siegrist's early attempts to seek information were thwarted by a lack of language skills. 'When I started to search the internet, I realised I wouldn't get very far because all the detailed information was in Japanese'. After quizzing friends and colleagues, he came across a Swiss radiologist who had completed a fellowship in Japan some years earlier. This fired his enthusiasm and he took advantage of the radiologist's invitation to join him on a trip to Osaka. During the trip in October 2010, the two Swiss doctors visited Osaka University Hospital and made the acquaintance of interventional cardiology Prof. Shinsuke Nanto who proposed associate Prof. Satoru Sumitsuji—a very active interventional cardiologist specializing in complex percutaneous coronary intervention (PCI) and imaging guided PCI—as a mentor.

As the first overseas cardiologist to seek post-graduate interventional training at the University of Osaka, Siegrist faced a number of obstacles; not least, the fact that the Japanese system does not recognize foreign medical licences. With his mentor's support he was able to obtain a temporary licence and move things forward. He was particularly enthusiastic about the University Hospital in Osaka, as it not only has a leading role in the development and implementation of complex cardiovascular interventions, but also contributes to high impact research. When Siegrist eventually accepted the 'great honour' of a special fellowship under the supervision of associate Prof. Sumitsuji, he looked forward to becoming integrated in clinical and academic work as well as building new networks with fellow professionals.

Having overcome immigration formalities, he was anxious to prepare himself to cope with the new language and culture and undertook a 3-month course in Japanese before taking up his position—a decision which proved wise. 'Although the Japanese are very open and friendly, it is virtually impossible to establish yourself outside the major international cities without the help of

English-speaking friends, co-workers and the university office for foreign student affairs. Basics such as finding a place to live, opening a bank account and dealing with immigration issues are only possible through the medium of Japanese'.

Initially, at work, he was able to use English and establish good working relationships with colleagues. Step-by-step he was introduced to the local style of PCI, which was quite different from what he learned in Switzerland. While the caseload was lighter than back home, cases were generally more complex and included the use of a number of different imaging methods for almost every patient. Pre-procedural CT scans are the norm with the intervention being planned accordingly and potential risks of plaque characteristics, calcification, occluded segments, etc. assessed. Furthermore, each PCI is guided by intravascular ultrasound.



Patrick Siegrist in the cath lab

Siegrist believes Osaka University Hospital is a good place for an interventional cardiologist as it focuses on image-guided PCI for complex interventions/CTO revascularizations (ante-grade and retrograde approaches). The success rate for chronic total occlusion (CTO) revascularization is globally and nationally very high.

Owing to Dr Sumitsuji, Siegrist also had the opportunity to visit many hospitals in Japan and abroad. He has also observed and assisted in numerous interesting and highly complex interventions and actively contributed to workshops at other centres as well as

at international and national conferences. He got used to the language and now conducts most PCI procedures in Japanese.

Although his special fellowship was only for 1 year to the end of 2012, he was able to extend for another year with his temporary licence and became a salaried member of staff.

His advice for anyone with a desire to follow a similar path is to think hard and prepare before going. 'Japan is a very safe and friendly country to live in with low levels of crime and very trustworthy people. On the downside, language and culture are likely to be significant barriers to progress. I would only recommend it to people with an interest in Japanese language and culture who are prepared to make the effort to integrate'.

He plans to continue to develop image-guided PCI for complex interventions such as CTO and build on his experience. His fellowship will conclude in 2014.

Old hands have told Siegrist that you have stayed too long in Japan when you find yourself bowing on the phone—something that has not happened to him just yet.



Echocardiographic assessment of the right ventricle

Which is the best echocardiographic method to assess right ventricular anatomy, function, and pathology?



Comprehensive evaluation of the right ventricle is critical, said Stamatios Lerakis, at the EuroEcho Imaging Conference, Atlanta, USA, December 2013. Right ventricular (RV) function is strongly associated with clinical outcomes in patients with heart failure and/or pulmonary vascular disease. The RV is a complex structure and comprehensive evaluation of the RV is critical.

Advances in echocardiography have resulted in the development of multiple techniques that improve the assessment of RV function. Today a variety of echocardiographic (echo) RV parameters can be measured routinely and can be used for diagnostic purposes, to decide about therapy and to follow the response or lack of response to therapy.

The right atrium is an important contributor to RV function and the right atrial area measured by echo can predict adverse outcomes in the setting of primary pulmonary hypertension.

Echographic evaluation of the morphology of the RV can provide significant clues about different pathological conditions such as idiopathic pulmonary hypertension, acute pulmonary embolism, and arrhythmogenic RV dysplasia. Just inspecting the morphology of the RV can assist in treating acutely critically ill patients. Changes in the shape of the left ventricle during the cardiac cycle seen on echo can also provide information about the haemodynamics in the right ventricle.

Two-dimensional and Doppler echo can be used to non-invasively determine systolic, mean, and diastolic pulmonary pressures as well as estimate the pulmonary vascular resistance with good correlation to measurements obtained invasively.

Parameters for quantitative assessment of overall systolic function include fractional area change, RV ejection fraction, and myocardial performance index.

Three-dimensional (3D) echo measurements of RV volumes and RV function correlate well with measurements obtained by cardiac

magnetic resonance (CMR) imaging, which is considered the gold standard for the comprehensive evaluation of the RV.

Regional methods of the quantification of RV function include tricuspid annular plane systolic excursion and tissue Doppler imaging of the tricuspid annulus. Each of these techniques has its advantages and its limitations and both are associated with prognosis and should be followed on an individual basis to assess response or not to a particular therapy.

Strain and strain rate for the assessment of RV myocardial motion are currently available to image with echocardiography, using tissue Doppler and speckle-tracking techniques. These techniques can detect early RV problems that cannot be seen with the naked eye.

Similar to the evaluation of the diastolic performance of the left ventricle we can assess the diastolic function of the RV using the tricuspid inflow velocities and the tissue Doppler imaging information as well as the right atrial size and the inferior and superior vena cava flows.

Echocardiography is very valuable for the evaluation of complex congenital diseases that very often affect the right heart, which is beyond the scope of this article. But it should be mentioned that echocardiography is a very useful tool for the evaluation of isolated intra-cardiac shunts and for accurately determining pulmonary and systemic flows and the Qp/Qs ratio.

Exercise-induced pulmonary artery systolic pressure increase by means of stress Doppler echocardiography may suggest RV contractile reserve and a better prognosis in patients with severe pulmonary hypertension and right heart failure.

With the continued progress in technology, such as advancements in 3D echo imaging, and the further clinical application and validation of myocardial deformation techniques such as strain and strain rate, the assessment of the RV will continue to get better.

Because of its portability, echo will continue to be the main imaging modality for evaluating the RV and, now, there is no longer any reason for the RV to be the forgotten ventricle.

Jennifer Taylor MPhil