Percutaneous coronary intervention (PCI) has been utilized for coronary revascularization for 27 years since the first application by Andreas Gruentzig in Zurich, Switzerland in September, 1977. The first case was a 37-year-old male, the same age as Dr. Gruentzig. This patient had a discrete lesion on the proximal left anterior descending coronary artery. The lesion was dilated 3 times with an inflation pressure of 5 atm. The procedure was quite successful and the follow-up angiography 23 years later still showed patency at the dilated site.2

Initially, this technique, percutaneous transluminal coronary angioplasty (PTCA) as coined by Dr. Gruentzig, was suggested to be used in restricted conditions: discrete, concentric, noncalcific, proximal lesions of left and right coronary arteries and short stenosis of bypass graft.3 He also suggested that PTCA should be performed only when the surgeon, anesthesiologist and operating room facilities were available. Then experience accumulated and, more importantly, there were refinement of the instruments and new devices developed, expanding the scope of coronary intervention.4 Nowadays, in the era of stenting, complex coronary anatomy, such as multivessel disease, chronic total occlusion, heavily calcified lesions, bifurcation lesions, orifice lesions, coronary graft lesions, left main stem lesions and smaller vessels are all candidate targets for intervention when indicated. Poor general conditions, such as acute myocardial infarction, heart failure or even cardiogenic shock are also proved to gain benefits from the interventions.5

Then there comes the concern: Is there any age limit for performing PCI?

In 1979, soon after the introduction of PTCA into clinical use, the National Heart, Lung, and Blood Institute of the United States established a voluntary registry to evaluate the safety and efficacy of this newly developed technique and to record the learning experience.6 The data from the Registry showed that only 12% of PTCA patients were aged over 65 years in 1977-1981, and this figure increased to 27%, more than double, during the period 1985-1986.4 Yet, in this report, the differences between the elderly and the younger patients concerning the clinical profiles, PTCA results, and clinical outcomes were not reported. In the following years, some papers about PTCA on older people appeared.7-18 The study subjects included elderly patients with ages greater than 65 years,7,9,10,12,13,17 70 years,8 75 years,14 and 80 years.11,15,16,18 The numbers of patients included were as few as 5316 or 54 cases,11 or as many as 98217 and 8828.18

Previous studies of PTCA on elderly subjects demonstrated quite similar clinical and angiographic pictures and PTCA results. The elderly patients usually have more severe symptoms,7,12-14,17,18 They frequently present with acute coronary syndrome.12 There are more patients with multiple-vessel diseases7,8,12-15 and more calcification on the coronary lesions,8,9,14,15 and they are more commonly with co-morbid conditions. When elderly PTCA are compared with PTCA performed on younger patients, it is interesting to note that the elderly patients usually received incomplete revascularization, i.e., elderly patients frequently have some diseased vessels spared from intervention. Yet, most of the studies demonstrated that the success rates of PTCA were comparable to the interventions performed on younger patients. Mock et al, however, exceptionally reported lower success rate for the elderly patients.7 Complications are reported to be comparable to those for the younger patients by some authors, but in some studies,12,16,18 this rate was reported to be higher in the elderly group. Long-term follow-up also revealed poorer prognosis for the elderly patients.7,12,13

From the literature, only case reports can be found for patients older than 90 years of age who were treated with PCI.19,20 It is interesting that an article of PCI on
very elderly patients, 90 years old or over, is presented in this issue of our journal. To my knowledge, this seems to be the largest series of PCI treatment on nonagenarians reported in the English literature. This article collected 20 nonagenarians who were proved to have significant coronary lesions. Of them, 2 were treated with CABG, 6 with medical treatment and 12 with PCI. For the 12 patients treated with PCI, a control group of 48 patients with ages younger than 90 years were collected from the same institution for comparison. The basic features, including symptoms, number of diseased coronary arteries, heart function, coronary calcification and co-morbidity are comparable to previous reports of patients with ages 65-89 years. The success rate in this series is also high. It is worth noting that in this patients with ages 65-89 years. The success rate in this series (25%), this is far lower as compared to other reported series (e.g., 75% in Klein’s series). Another point of note is the very low stenting rate in this series (25%), this is far lower as compared to other reported series (e.g., 75% in Klein’s series).

From the present series and also from previous studies, it may be safe to conclude that age itself is not a limitation for adapting PCI to treat the elderly patient, whether he or she is 65 year old or 95 years old. But the associated conditions, including general condition, anatomic changes, co-morbid conditions, etc., should be carefully considered before making a decision to choose PCI as the treatment modality for the patient. Also, special care should be taken to manage the patient non-cardiac abnormalities to obtain the optimal outcome.

REFERENCES