STEMI and PCI in Switzerland 2000–2010: Pre-hospital delay and door-to-balloon time

Current guidelines for reperfusion therapy in patients with acute ST-elevation myocardial infarction (STEMI) undergoing percutaneous coronary intervention (PCI) recommend a door-to-balloon time of less than 90 minutes, even for patients transferred from hospitals without heart catheter laboratory facilities.1–2

To assess the situation in Switzerland between 2000 and 2010, we used data from the national registry of Acute Myocardial Infarction – AMIS Plus. Details of the AMIS Plus Registry have been published elsewhere.3 All STEMI patients who underwent PCI were included. Data were analyzed on pre-hospital delay, defined as the time between symptom onset and admission, and door-to-balloon time, defined as the time between admission and the first automatic arterial blood pressure measurement in the heart catheter laboratory. From 2000 to 2010 a total of 10,408 STEMI patients from 66 Swiss hospitals underwent PCI. Of these patients, 77% were male and 23% were female. Baseline characteristics of the STEMI patients changed slightly over the course of this 11-year time span (Tab.). However, these changes were neither linear nor constant per admission year. A significant trend was seen in women with STEMI who were older at admission whereas the age of male patients remained the same. No changes were seen in patients with diabetes but there were significant increases in the amount of patients with hypertension and/or obesity. Fewer patients smoked, fewer patients had dyslipidemia and fewer patients had moderate to severe co-morbidities. Delay between symptom onset and admission decreased significantly during this period of 11 years from 180 min (IQR 105, 482 min) to 170 min (100, 392 min). The greatest decrease was observed in 2008 after the national public campaign HELP of the Swiss Heart Foundation.4

Female STEMI patients arrived at hospital later with a pre-hospital delay 18% longer than male patients, after adjusting for age this reduced slightly to 11%. To put this in mathematical terms the delay for women was the same as the delay for men plus an additional 15 years. Door-to-balloon time decreased from 60 minutes (IQR 30, 155 min) in 2000 to 53 minutes (IQR 20, 90 min) in 2010 (Fig. 1). Although this translated into a very modest decrease in door-to-balloon time for male patients, the decrease for female patients was remarkable reducing from 80 minutes (IQR 26, 237 min) to 65 minutes (IQR 23, 99 min).

**Guideline conformance results**

The guideline conformance results of door-to-balloon time showed that in 2000, 65.9% and in 2010, 75.4% of all STEMI patients had PCI within 90 minutes. This also includes those who were transferred for intervention.

Tab.: Baseline characteristics of STEMI patients who underwent PCI 2000–2010 (n=10,408) STEMI: ST-segment elevation myocardial infarction; PCI: percutaneous coronary intervention
Pre-hospital delay of STEMI patients is still too long but door-to-balloon time is well within the guideline-recommended timeframe in Switzerland. However, although time to treatment of STEMI patients decreased during the last 11 years, it did not translate into a significant reduction of in-hospital mortality in this patient population.

Efforts to improve outcome should not simply address a single quality measurement but instead embrace the broader spectrum of procedures in acute myocardial infarction care.

References:
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