SHORT COMMUNICATION

The network of invasive cardiology facilities in Poland in 2016 (data from the ORPKI Polish National Registry)

Paweł Kleczyński¹, Zbigniew Siudak², Artur Dziewierz¹, Tomasz Tokarek², Tomasz Rakowski¹, Jacek Legutko¹, Stanisław Bartus², Dariusz Dudek¹²

¹²Department of Cardiology, Jagiellonian University Medical College, Krakow, Poland

INTRODUCTION

Despite significant advancements in cardiac care, cardiovascular diseases (CVDs) are the main cause of mortality in Poland. Thus, they should be a priority in the national health policy. In addition, further optimisation of medical care requires maintenance of an effective, integrated, and networked structure of the treatment of CVDs. In Poland, treatment of coronary artery disease, including acute coronary syndrome (ACS), is currently provided complementarily by a network of high- and low-volume percutaneous coronary intervention (PCI) centres. Importantly, the network has been organised and developed by Polish cardiologists for almost 20 years. During that period, multiple strategies have been introduced to improve the safety and efficacy of national care for patients with ACS. These have included a reduction of the time from first medical contact to reperfusion through an increase in the availability of primary-PCI centres, direct transfer, bypassing non-PCI-capable hospitals or emergency departments, and early cath lab activation after electrocardiogram teletransmission from the field [1–5]. Despite this, approximately 50% of patients with ST-segment elevation myocardial infarction (STEMI) are still not transferred directly to the appropriate facility and may experience an unnecessary delay to reperfusion [3, 4]. Thus, regional and countrywide systems of care face an ongoing challenge of determining the best policies for geographical distribution of cath labs and time frames of transferring the patients from referring centres to primary-PCI hospitals. Data on the current activity and geographical distribution of cath labs may be helpful to refine the network. Thus, we sought to evaluate the current number, performance, and localisation of PCI facilities in Poland, based on data from the Polish National PCI Registry (ORPKI).

METHODS

The ORPKI Registry is operated by the Jagiellonian University Medical College in Krakow, Poland (https://www.orpki.cm-uj.krakow.pl/) and is endorsed by the Polish Association of Cardiovascular Interventions of the Polish Cardiac Society (AISN PTK) [6]. The registration in the ORPKI database is voluntary; however, as much as 98% of all catheterisation laboratories in Poland have joined the registry. For this study, complete data for 2016 collected from 157 cath labs were extracted. The centres were divided into high-volume (≥ 400 PCIs/year) and low-volume (< 400 PCIs/year), depending on the total number of all PCIs performed in a particular cath lab in 2016. A cut-off value of 400 PCIs/year was selected, as recommended by the European Society of Cardiology (ESC) guidelines on myocardial revascularisation [6]. In addition, data from the highest-volume centres, according to a cut-off value of 1000 PCIs/year, were assessed. Subsequently, data concerning numbers of PCIs were stratified by the initial diagnosis.

RESULTS AND DISCUSSION

In 2016, 115,790 PCIs were performed in 157 cath labs in Poland. On average, each invasive cardiology facility provided care for a mean of 239,000 inhabitants. A total of 26 centres performed < 400 PCIs/year (5604 PCIs, 22% STEMI, 22% non-STEMI [NSTEMI], 27% unstable angina, 27% stable angina), and 131 centres performed ≥ 400 PCIs/year (110,186 PCIs, 19% STEMI, 17% NSTEMI, 31% unstable angina, 32% stable angina). 4.8% of all PCI procedures were performed in low-volume centres, which comprised 17% of all PCI centres. Notably, 72.5% of PCIs in low-volume centres were performed in patients with ACS. The distribution of cath labs depending on the number of PCIs/year...
is presented in Figure 1A, B. A total of 32 centres performed > 1000 PCIs/year (42,533 PCIs, 15% STEMI, 14% NSTEMI, 34% unstable angina, 36% stable angina) and 125 centres performed < 1000 PCIs/year (73,257 PCIs, 22% STEMI, 19% NSTEMI, 30% unstable angina, 29% stable angina; Fig. 1C, D).

The current report underlines the importance of low-volume PCI centres operating on a 24/7 basis in providing cardiovascular care for patients in Poland. Despite the fact that only 4.8% of all PCIs were performed in low-volume PCI centres, these centres seem to be crucial in providing care to patients presenting with ACS. The distribution of complementary high- and low-volume centres corresponding to population density seems to be optimal for the covered regions. In 2016, those 160 (157 reporting centres) cath labs operating 24/7 provided cardiac care for an average of 239,000 inhabitants. These numbers are consistent with the requirements of AISN PTK and ESC guidelines [7–9]. To build an effective system of STEMI care, partnerships between STEMI-referral hospitals, primary-PCI hospitals, and emergency system teams are critical (a so-called “hub-and-spoke” system) [10]. Networks for STEMI and ACS treatment allow a reduction of the time from the onset of symptoms to reperfusion [5]. Importantly, further reduction of delay to reperfusion is crucial because the prolongation of time to reperfusion may adversely affect outcomes [5]. Thus, the main rationale for the support of low-volume PCI centres is their geographical availability. The reduction in time from the first medical contact to balloon inflation depends on the pattern in which the patient is referred to the cath lab [5]. In addition, close cooperation between primary-PCI facilities, non-PCI-capable hospitals, and emergency medical services may allow optimisation of pre-hospital treatment of ACS patients [11]. The total number of PCI procedures in each centre is also dependent on the type of the contract with the National Health Service. Low-volume centres have a limited financial contract for elective procedures and have been able so far to perform urgent PCIs without limits.
Despite differences in the number of procedures performed in PCI centres, from the geographical perspective, low-volume facilities are equally as important as the high-volume ones because they especially serve patients presenting with ACS. Distribution of high- and low-volume centres seems optimal. However, in the perspective of an ageing population, further efforts are needed to enhance cardiovascular care networks.

**Conflict of interest:** none declared

**References**


