

In our country, Paramedic Education was began as a two-year degree program by the name of "Ambulance and emergency care technician" in Dokuz Eylül University in 1993. Nowadays, education is continuing under the name of "First aid and emergency care" in 69 university with 98 programs (3).

In First Aid and Emergency Care Programs, paramedic education starts with a background program of anatomy, physiology and pharmacology. Then paramedic students are trained to use ambulance equipments, initiate intravenous infusions, calculate medication dosages and administer appropriate medications, perform detailed physical examinations and advanced levels of prehospital care for medical emergencies and trauma. Paramedic training focused on many of the advanced skills such as interpreting electrocardiograms, performing endotracheal intubation, defibrillation and advanced cardiac life support (2).

Paramedics authority and responsibilities are appointed by the Ministry of Health (MoH) in our country with Emergency Health Services Guidelines in 2000. Paramedics are employed by MoH in 112 Emergency Health Services in 2004 (4).

According to the Emergency Health Services Guidelines, paramedics provide advanced pre-hospital emergency care under medical command authority to acutely ill or injured patients and transport patients by ambulance or other appropriate emergency vehicles. Some of the paramedic responsibilities are, twelve-lead ECG monitoring and interpretation, performing advanced airway management, tracheal intubation, oxygen administration, intravenous fluid replacement, cardiopulmonary resuscitation including intubation, drug administration (includes antiarrhythmics), ECG interpretation (may be limited to three-lead), semi-automatic and/or manual defibrillator, trauma stabilization and administer permitted drugs to include any drug in a practicing protocol or ordered online.

In our country, Ambulance Services are activated by Emergency Call Center by receiving the emergency call which is made from 112 free telephone number. The ambulance team that reached the scene provides emergency medical care and if necessary, transport the patient to a hospital. Treatment can also be continued en route to a hospital if more definitive care for the patient is required.

Beyond being a team of health care services, we think that being knowledgeable about the new health professions as an important role in the planning and the execution of community education.

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## Radiation safety awareness and practice among Iranian cardiology and radiology residents/fellows

To the Editor,

There are limited reports in the literature addressing radiation safety awareness and practice in post-graduation educational groups including cardiology and radiology residents/fellows (1, 2). In this target population, there are some unanswered questions about their awareness/practice of radiation protection. These include the educational courses offered by the universities for residents about radiation exposure and its risks, the current state of safety devices usage, awareness about hazardous radiation risks, being familiar with international guidelines in this regard, and the like. Hence, we decided to study the awareness and practice of a sample of Iranian cardiology and radiology fellows/residents about radiation safety protocols and using protective devices against radiation. For this reason, we gathered the required data using a pre-designed questionnaire from 725 cardiology or radiology residents/fellows.

Only ten percent of the sample had attended radiation protection training programs. Eight percent had information about the amount of radiation they received during the preceding year. Only less than four percent (3.7%) of the participants reported that complete blood cells (CBC) checking had been performed in their educational centers and 18.1% of them personally checked their CBC. Thyroid collars, lead shielding and radiation badges were commonest radiation protection devices. Most (67%) of them advocated that in their journal clubs they did not have any discussion about radiation protection. Just 0.8% reported that such discussions are made regularly in their academic meetings and 30.5% reported this as being occasional. They reported that 17.9% of their professors usually did not respect to international protocols such as ALARA (as low as reasonably achievable) strategy. Only 21.7% of them were aware about radiation rules within pregnancy period. A few numbers of residents/fellows (11.7%) were aware of any radiation protection guidelines in the textbooks and among them 38% used the Iranian Atomic Energy Organization guideline for radiation protection. Near to one third (29.8%) of the survey respondents read some references about radiation impact on human life themselves. Among the respondents, only 7.9% reported that there was "a defined instruction document about dealing with radiation and its protection" in their center and most of them (65.8%) were not aware about radiation protection instruction in their center.

Radiation exposure might lead to major adverse impacts on clinical practitioner especially clinical cardiologists and radiologists. Cardiology and radiology residents/fellows are exposed to higher levels of radiation than faculty members due to their educational role in health care system (3). Some researchers reported that in addition to inadequate training, some other causes such as discomfort of using protective devices and fear of impairment of image quality due to reduced time of radiation process were responsible for lower awareness of cardiology and radiology residents/fellows (4). Awareness/practice of Iranian cardiology/radiology residents/fellows about radiation exposure safety issues is not

acceptable currently. It is suggested that radiation safety training to be offered at the beginning of residency/fellowship for residents/fellows in a comprehensive and uniform way throughout medical universities.

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# Monocuspidalisation of the mitral valve can be a solution for ischemic mitral regurgitation

To the Editor,

Mitral valve repair is the preferred treatment for patients with mitral valve regurgitation (MR); however almost one third of all diseased mitral valves cannot be repaired (1). This ratio is even worse in patients with ischemic MR (2). Ischemia and resultant segmental or global left ventricle dilatation results in restriction of posterior leaflet motion. Tethering of the posterior leaflet (Type IIIb MR) makes it unavailable for coaptation with the anterior leaflet in the absence of structural damage to the valve (3). The standard surgical approach to attain competence is revascularization and remodeling of the mitral valve annulus with a restrictive annuloplasty. Downsizing 1 or 2 sizes does not relieve tethering but shifts the posterior annulus anterior to achieve coaptation (2, 3). Early results are generally satisfactory but unfortunately further remodeling of the left ventricle cause a deterioration of the regurgitation during the first six months following the procedure. Restrictive annuloplasty is also accompanied by the risk of functional MV stenosis (4). As the conventional repair of ischemic MR can be suboptimal with high recurrence rates, many surgeons prefer mitral valve replacement (MVR) which means "Replacing a disease with another!"

A new device called Mitrofix™ can be an option to restore mitral valve functions where the posterior leaflet is partially or completely

dysfunctional as in ischemic MR. It is a bio-posterior leaflet that imitates a closed posterior mitral valve. Using the device results in monocuspidalisation of the mitral valve by preserving the anterior leaflet and the subvalvular apparatus. As the anterior leaflet contributes 70% of the mitral valve effective orifice area (EOA), the resultant EOA is much more than what we expect for restrictive annuloplasty or MVR (5).

We have been using this device in ischemic MR since July 2013 and our initial experience is much more than satisfactory. The device was successfully implanted in 6 patients and the early intraoperative and postoperative echocardiography demonstrated none or trivial residual MR in 5 of them and 1-2+ in one. Importantly, the mean EOA measured was 2.26 cm<sup>2</sup>, with a mean gradient of 4.5 mmHg during the first postoperative control before discharge. Our results are comparable with the results of Oertel et al. (5), who published first multicenter study using this device in 2012.

We still don't know the long term follow up but Mitrofix™ has some theoretical advantages in the long term. Such advantages include avoidance of anticoagulation and fewer recurrence of MR since further remodeling of left ventricle (LV) will not affect the bio-posterior leaflet and the valve will become competent unless anterior leaflet functions improperly. We are thus coming to a conclusion that total monocuspidalisation of the mitral valve (Restore rather than repair) can be a solution for ischemic MR in near the future; we believe awareness of this treatment option should increase among cardiac surgeons and cardiologists.

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