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Application of ultrasound diagnostics in cardiopulmonary resuscitation

Примена дијагностичког ултразвука у кардиопулмоналној реанимацији

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Application of ultrasound diagnostics in cardiopulmonary resuscitation **Примена дијагностичког ултразвука у кардиопулмоналној реанимацији**

The paper entitled „Application of ultrasound diagnostics in cardiopulmonary resuscitation“ [1] represents one of the papers from the category literal review which analyses the possibility of ultrasound (US) application during cardiopulmonary resuscitation (CPR). Conducting the resuscitation for several decades I believe that this represents a minor CPR topic due it can be applied only while verifying the conscious during CPR (which needs to be avoided) because we have less than 10 seconds (what can be done in such a short notice?) as well as the real indications are only present in posttraumatic heart arrest (tension pneumothorax) and hypovolemia or these are the conditions that anaesthesiologists easily recognize and reanimate).

Pulmonary thromboembolism (PTE) has being proved by indirect US findings (dilatation and hypokinesis of RV, tricuspid regurgitation, increased systolic pressure in Rcounter at adilated non-collapsible right hollow vein – RHV), but that can be useful only when heart works and we are talking here about heart arrest provoked by PTE so if the heart is working we cannot see dilatation and hypokinesis of the right heart chamber, tricuspid regurgitation, etc.

At the end, the recommendation to all authors and all who are planning to introduce urgent US during CPR is that this is only possible in intrahospital CPR when the patient is already admitted in intensive treatment. That is also noted in the recommendations of European Resanimation Council which emphasize the application of urgent US during ACSL (Advanced Cardiac Life Support) used generally in the hospital [2].

The insisting that CPR should be divided in outside hospital and intrahospital has a great influence and has been applying from the times of projects having for topic outside hospital heart arrest and especially from publishing large multicentral study of World Health Organization entitled WHO MONICA Project (Multinational MONItoring of Trends and Determinants in CARDiovascular Disease), conducted between 1980 and 1990 in 21 states which firmly stated that cardiac arrest occurred outside hospital has been generally caused by coronary disease and that is developed by ventricular fibrillation (VF) type while intrahospital cardiac arrests have been developed by asystole and electric activities without a pulse (PEA-Pulseless Electric Activity). One study has demonstrated cardiogenic ethology in 91,5% from the total of 10,861 cases of outside hospital cardiac arrests taking cared by Emergency room [3, 4].

Since that moment the resuscitators have in mind these basic measures of CPR (massage of heart muscle and artificial breathing) in outside hospital cardiac arrest are only “buying some time” and it is needed as soon as possible to apply causal therapy as defibrillation saying countershock by electric current which interrupts VF. In that time automatic external defibrillators (AED) appeared as

devices who analyse rhythm independently and bringing decision about defibrillation with the accuracy of >98%, in the way that also people who are not doctors can use them. This represents the basis for PAD (Public Access Defibrillation) program development as the objective of contemporary CPR which also comprises the network of resuscitators amateurs equipped with AED on the places of massive gatherings [5, 6].

All noted has for ultimate goal to emphasize the wish and willing of contemporary CPR on earliest application of defibrillation in outside hospital cardiac arrest in the way that application of US in these conditions has less importance. The only possibility is to apply this method intrahospital but also in rare periods of conscious verification of the patient suffered from cardiac arrest.

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