The study is focused on advanced life support (ALS) performed by rescue team physicians in an out-of-hospital setting. The first part of the study analyzes diagnostic possibilities and correctness of assumed aetiology of the sudden cardiac arrest during cardiopulmonary resuscitation (CPR) in the field. It introduces an original method of “Crosscheck Tables” and applies this method to 211 cases of CPR provided by physicians of the Emergency Care Service. The study demonstrates that significantly misleading conclusions can result from a global analysis of a set of cases. It stresses importance of diagnostic analyses applied to individual cases. The second part of the study concentrates on changes in PETCO2 level as related to the return of spontaneous circulation (ROSC - Return of Spontaneous Circulation) as opposed to the circulation fully dependent on chest compressions. The study demonstrates that in constantly ventilated patients undergoing CPR in an out-of-hospital setting, PETCO2 is significantly higher (about 10 mmHg) after ROSC than before ROSC. It demonstrates that a sudden increase in PETCO2 exceeding 10 mmHg is likely to indicate the moment of ROSC. The study also support a view that steadily low levels of PETCO2 values (<10 mmHg) indicate a low chance for a successful resuscitation outcome.

Key words: cardiac arrest; advanced life support; capnography; end-tidal carbon dioxide PETCO2; return of spontaneous circulation