Background and objective: Various complications may occur in the prehospital management of an acute coronary syndrome with ST elevation (STEMI) patient. However, these complications may not come in any patients and may interfere with the treatment. The aim of the study was to compare the characteristics of complicated (Cpk) and uncomplicated (N-Cpk) STEMI.

Methods: Data came from a regional prospective registry (40 mobile intensive care units, MICU) which includes STEMI < 24 h primarily managed by 8 out-of-hospital emergency medical services (EMS) from 2003 to 2013; characteristics, management and mortality were collected. Complications are defined by Killip class > 1, use of amines, rhythm or conduction disorders and resuscitation.

Results: 18,152 STEMI were included, of which 3,600 (20%) had secondary complications. 
- The proportion of CPK increased from 20% in 2003 to 16% in 2013.
- Patients with complicated STEMI were older.
- Patients with complicated STEMI included more women.
- When taking care of these patients, the decision of an unclogging was similar in both groups but patients with Cpk:
  → Have most likely undergone a thrombolysis,
  → Whereas patients with N-Cpk have mostly likely benefited from a primary angioplasty.
- Pre-hospital management: Aspirin was less used in Cpk and low molecular weight heparin (LMWH) was less used in Cpk compared with unfractionated heparin (UFH).
- The overall median pain-arrival at the hospital delay was similar in both groups:
  → Even if pre-hospital management for Cpk patients was longer.
  → In fact, patients with Cpk called an ambulance earlier than the N-Cpk patient.
- Mortality: Pre-hospital mortality was higher in Cpk, as well as in-hospital mortality.

The presence of a complication in prehospital management of STEMI alters the behavior of the patient and the emergency physician.