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Postersession II

Abstract B

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Overskrift Efficacy and safety of intravenous fentanyl administered by ambulance personnel

Introduction
Management of pain in the prehospital setting is often inadequate. In 2011, ambulance personnel were authorized to administer intravenous fentanyl to patients with injury or chest pain and other patients with painful conditions after prior consultation with a physician. Before that time, the administration of opioids to patients with acute pain was solely in the hands of prehospital physicians or paramedics. The aim of this study was to evaluate the efficacy and safety of intravenous fentanyl administered by ambulance personnel.

Methods
Prehospital medical charts from 2348 adults treated with intravenous fentanyl by ambulance personnel during a 6-month period were reviewed. The primary outcome was the change in pain intensity on a numeric rating scale (NRS) from before fentanyl treatment to hospital arrival. Secondary outcomes included the number of patients with NRS > 3 at hospital arrival, the number of patients with clinically meaningful reduction in pain intensity during transport (NRS > 2) and potential fentanyl-related side-effects.

Results
Fentanyl reduced pain from before treatment (8, IQR 7-9) to hospital arrival (4, IQR 3-6) (NRS reduction: 3, IQR 2-5; P = 0.001); 1863 patients (79.3%) had a reduction in NRS > 2 during transport; 1371 patients (58.4%) experienced at least moderate pain at hospital arrival (NRS > 3). Median fentanyl dose was approximately 1 µg/kg, which is only half of allowed maximum total dose. Twenty-one patients (0.9%) had oxygen saturation < 90%. A decrease in Glasgow Coma Scale was seen in 31 patients (1.3%) and hypotension observed in 71 patients (3.0%).

Discussion
The strength of our observational study was first of all the large sample size. Additionally, the consecutive sampling was carried out in a large geographical region with both rural and urban population in order to achieve a broad, generalizable sample of patients. Our study also had limitations mostly reflected in the retrospective design. Furthermore, our study was noncomparative so the apparent reduction in pain scale scores may only partially be explained by the analgesic effect of fentanyl.

Conclusion
Intravenous fentanyl seems effective and safe in the hands of ambulance personnel. The high incidence of patients with unrelieved pain at hospital arrival suggests that the applied protocol for fentanyl administration might have been too restrictive and/or inadequately implemented. To improve pain management, continuous education of ambulance personnel seems important.

Table 1
Patient characteristics and analgesic efficacy of intravenous fentanyl

	Total (n=2348)	Injury (n=1201)	Chest pain (n=577)	Abdominal pain (n=298)	Others (n=272)
Age (years)	59.2 (39.5-74.4)	61.6 (33.5-79.2)	62.7 (52.8-73.4)	46.5 (32.8-61.2)	52.1 (38.3-68.63)
Sex M/F (%)	50.3/49.7	55.7/44.3	40.0/60.0	52.8/47.2	47.1/52.9
NRS before treatment	8 (7-9)	8 (7-9)	7 (6-8)	8 (7.5-10)	8 (7-9.6)
NRS at hospital arrival	4 (3-6)	4 (3-6)	3 (2-5)	5 (3-7)	4 (3-6)
NRS reduction	3 (2-5)	3.5 (2-5)	3 (2-5)	3.75 (2-5)	3 (2-5)
NRS reduction ≥ 2	79.3% (77.7-81.0)	81.2% (79.0-83.4)	78.0% (74.6-81.4%)	78.2% (73.5-82.9)	75.4% (70.2-80.5)
NRS > 3 at hospital arrival	58.4% (56.4-60.4)	60.4% (57.7-63.2)	46.3% (42.2-50.4)	69.1% (63.9-74.4)	63.2% (57.5-69.0)
Fentanyl (cum.dose µg/kg)	1.03 (0.88-1.67)	1.25 (0.94-1.83)	0.97 (0.67-1.31)	1.06 (0.84-1.54)	1.02 (0.86-1.79)
Treatment time (minutes)	46 (32-61)	48 (34-63)	44 (29-58)	42 (30-57)	49 (34-63)

Data presented as medians with interquartile ranges or as proportions (%) with 95% confidence intervals.
Treatment time defined as the time from arrival on scene until hospital arrival.

Abbreviations:
Cum.dose= cumulative dose
NRS = Numeric rating scale

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Overskrift Comorbidity and medication use are risk factors for non-shockable rhythm in patients with out-of-hospital cardiac arrest

Introduction
Cardiac arrest carries a poor prognosis. Based upon the first recorded cardiac rhythm cardiac arrest patients are divided into shockable rhythms (i.e. ventricular fibrillation (VF) and pulseless ventricular tachycardia (VTp)) or non-shockable rhythms (i.e. pulseless electrical activity (PEA) and asystole). Non-shockable rhythms are the most prevalent heart rhythm for both in- and out-of-hospital cardiac arrest (OHCA). While survival from OHCA with shockable rhythms has increased over time, survival following non-shockable rhythms remain low. Thus, identification of risk factors for non-shockable rhythms are important to reduce mortality.
We hypothesize that patients with non-shockable rhythms and shockable rhythms are two disparate patient groups where patients with non-shockable rhythms are characterized by a high non-cardiac disease burden when compared to patients with shockable rhythms.

Methods
Using data from the nationwide Danish Cardiac Arrest Registry (2001–2012), we identified 33,617 OHCA patients ≥18 years old. Patients with missing first-recorded heart rhythm and EMS witnessed cardiac arrest where excluded from the study leaving 29,863 OHCA patients for further analysis. The Danish National Patient Register was used to identify comorbidities and the Danish National Prescription Registry was used to identify drug prescriptions (within 180 days prior to the cardiac arrest. A multivariable logistic regression model was used to estimate odds ratios for risk factors associated with non-shockable rhythms.

Results
Compared to patients with shockable rhythms patients with non-shockable rhythms were characterized by a higher median age 71 years (IQR 60-81) vs. 67 years (IQR 58-77), higher proportion of women (38% vs. 21%), lower proportion of witnessed collapse (43% vs. 77%) and bystander CPR (31% vs. 55%), and time from recognition of OHCA to first rhythm analysis was longer: 13 min (IQR 7-22) vs. 9 min (IQR 6-14). Furthermore a higher proportion of non-shockable rhythm occurred in private homes (78% vs. 58%) compared to public location. In a fully adjusted model (table 1) a higher degree of cancer, cerebrovascular disease, neurological disease, pulmonary hypertension, chronic obstructive lung disease and the use of antidepressants, antipsychotics, anxiolytics, analgesics, corticosteroids, and antibiotics (the latter within 14 days) where associated with non-shockable rhythms (figure 1). In contrast, the use of cardiovascular specific drugs and history of cardiovascular disease was ass ociated with a lower risk of non-shockable rhythms.

Conclusion
A history of non-cardiac disease and use of non-cardiac drugs are risk factors for non-shockable rhythms while a history of cardiac disease and use of cardiac drugs are associated with a lower risk of non-shockable rhythms.

Figure 1

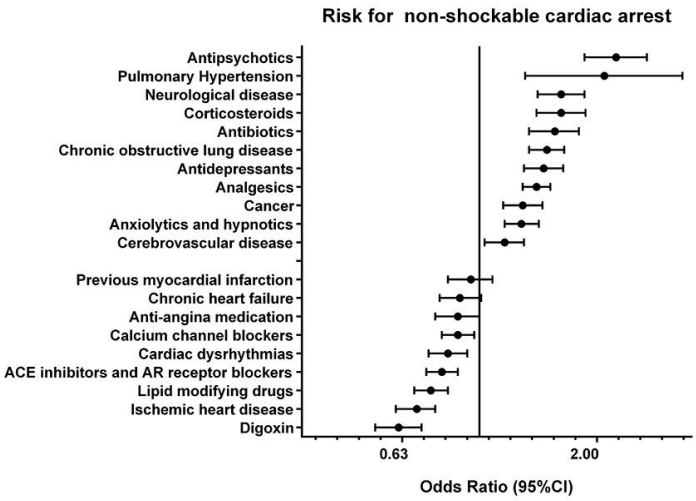

Table 1

Factors associated with higher risk of non-shockable heart rhythm	Adjusted Odds Ratio*	95%CI
Antipsychotics	2.24	(1.86-2.69)
Pulmonary Hypertension	2.09	(1.31-3.32)
Neurological disease	1.62	(1.41-1.86)
Corticosteroids	1.62	(1.40-1.87)
Antibiotics	1.56	(1.34-1.80)
Chronic obstructive lung disease	1.49	(1.34-1.65)
Antidepressants	1.46	(1.30-1.64)
Analgesics	1.4	(1.29-1.52)
Cancer	1.29	(1.15-1.45)
Anxiolytics and hypnotics	1.28	(1.16-1.42)
Cerebrovascular disease	1.16	(1.03-1.30)
Factors associated with lower risk of non-shockable heart rhythm		
Previous myocardial infarction	0.95	(0.83-1.08)
Chronic heart failure	0.89	(0.79-1.01)
Anti-angina medication	0.88	(0.77-1.0)
Calcium channel blockers	0.88	(0.80-0.97)
Cardiac dysrhythmias	0.83	(0.74-0.93)
ACE inhibitors and AR receptor blockers	0.80	(0.73-0.88)
Lipid modifying drugs	0.75	(0.68-0.83)
Ischemic heart disease	0.69	(0.61-0.77)
Digoxin	0.62	(0.54-0.71)

*Variables included in the multivariate analysis: age, year of arrest, gender, witnessed status, bystander CPR, location of arrest, time, chronic heart failure, ischemic heart disease, previous myocardial infarction, cardiac dysrhythmias, vascular disease, pulmonary embolism, pulmonary hypertension, syncope, cerebral disease, cerebrovascular disease, diabetes, pulmonary disease, liver disease, renal disease, rheumatic disease, cancer, peptic ulcer, angiotensin converting enzyme inhibitors and angiotensin receptor blockers, anti-angina medication, beta blockers, calcium blockers, digoxin, diuretics, lipid modifying drugs, platelet aggregation inhibitors, vitamin K antagonists, antidepressants, antipsychotics, analgesics, anxiolytics and hypnotics, corticosteroids and antibiotics.

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Overskrift Ultrasound Characteristics of the Right Ventricle During Cardiac Arrest Caused by Ventricular Fibrillation, Hypoxia and Pulmonary Embolism – A Randomized Porcine Study

Introduction
Survival from non-shockable cardiac arrest is unlikely unless a reversible cause is identified and treated. International resuscitation guidelines state that ultrasound has the potential to identify reversible causes of cardiac arrest. Currently, ultrasonographic findings from patients with spontaneous circulation are extrapolated to patients in cardiac arrest. Right ventricular (RV) dilation is a finding normally associated with pulmonary embolism, but porcine studies have shown that RV dilation is also seen in ventricular fibrillation and severe hypoxia. No studies have investigated how causes of cardiac arrest affect RV size during resuscitation.

Hypothesis
The RV diameter is larger during resuscitation of cardiac arrest caused by pulmonary embolism when compared to hypoxia and ventricular fibrillation.

Methods
Pigs were anesthetized and randomized to cardiac arrest induced by ventricular fibrillation, hypoxia or PE. Following 7 minutes of untreated cardiac arrest, advanced life support (ALS) conforming with European Resuscitation Council 2010 guidelines was commenced. Cardiac ultrasound images of the RV from a subcostal 5-chamber view were obtained during induction of cardiac arrest and during ALS rhythm analyses. The RV diameter was measured two centimeters from the aortic valve at end diastole. Based on a sample size calculation with respect to the a priori determined primary endpoint, RV diameter at the 3rd rhythm analysis, it was determined that eight pigs were needed in each group (mean values: Ventricular fibrillation 24.5 mm, hypoxia 19.5 mm, pulmonary embolism 34.5 mm. Standard deviation 7.7 mm. α=0.05, β=0.1)

Results
At baseline there was no difference in RV diameter between groups ((mean(95%CI)): 19.8 (18.0-21.5) mm in the ventricular fibrillation group, 19.8 (16.6-22.9) mm in the hypoxia group, and 21.8 (19.2-24.3) mm in the PE group (p = 0.34). During induction of cardiac arrest the RV diameter increased to 29.6 (27.3-31.9) mm in the hypoxia group and 38.0 (33.4-42.6) mm in the pulmonary embolism group (p for difference to baseline <0.01). Induction of ventricular fibrillation caused an immediate significant increase in the RV diameter to 25.0 (21.2-38.8) mm (p for difference to baseline >0.01). At 3rd ALS rhythm analysis RV diameter was 32.4 (28.6-36.2) mm in the PE group, which was larger than both the hypoxia group at 24.9 (22.2-27.5) mm and ventricular fibrillation group at 23.3 (19.5-27.0) mm (p for difference between groups <0.01).

Conclusions
Cardiac arrest due to ventricular fibrillation, hypoxia, and pulmonary embolism all caused an increase in RV diameter. During resuscitation, the RV diameter was larger in pulmonary embolism compared to ventricular fibrillation and hypoxia. Focused cardiac ultrasound may have a potential to detect pulmonary embolism during resuscitation.

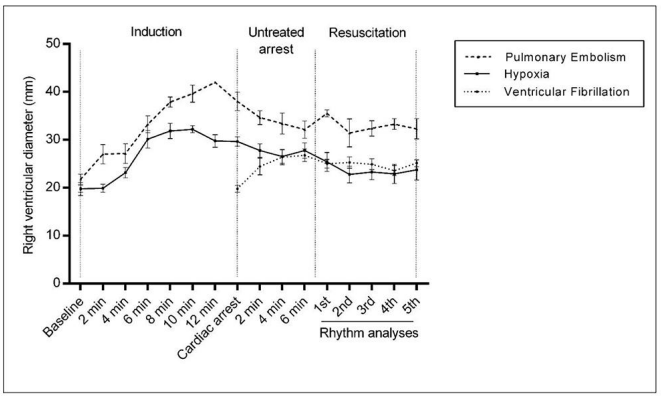

Figure 1 – Mean diameter of the right ventricle.

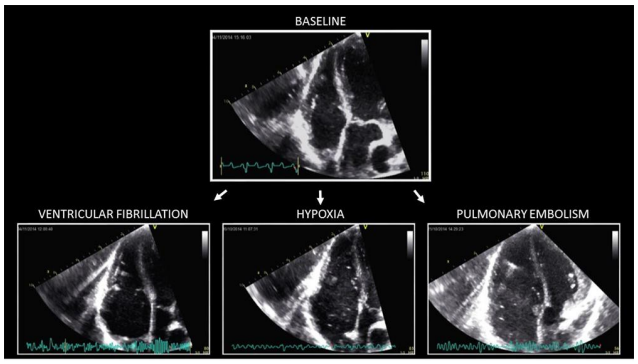

Figure 2 – Representative ultrasound images of the right ventricle during baseline and cardiac arrest.

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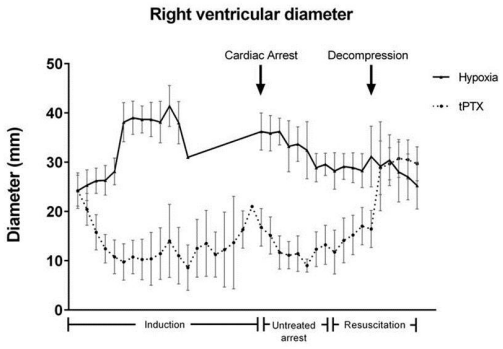
Overskrift Focused Cardiac Ultrasound has the Potential to Detect Tension Pneumothorax as a Reversible Cause of Cardiac Arrest – an Experimental Porcine Study

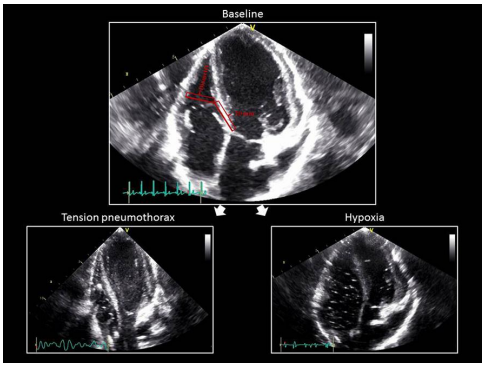
Introduction
Survival from cardiac arrest (CA) with a non-shockable rhythm is unlikely unless a reversible cause is identified and treated. Tension pneumothorax (tPTX) is a reversible cause of CA that easily can be missed during resuscitation. International guidelines state that focused cardiac ultrasound has the potential to detect reversible causes of CA . tPTX is believed to compress the heart and great vessels, causing the diameter of the right ventricle (RV) to decrease. In contrast, CA caused by ventricular fibrillation or hypoxia results in RV dilatation. Currently, the ultrasonographic features of tPTX before and during CA are unknown.
We hypothesize that: 1) At the onset of CA, RV diameter is decreased in the tPTX group when compared to hypoxia 2) Following CA and CPR the RV diameter will increase in the tPTX group, abolishing difference in RV diameter between groups.

Methods
Pigs were randomized to CA induced by either unilateral tPTX or hypoxia. tPTX was induced by injecting increments of air into the intrapleural cavity to a total volume of 50 ml/kg (90% of total lung capacity). Hypoxia was induced by gradually reducing the tidal volume over 30 min. Subcostal 5-chamber ultrasound images of the RV where obtained during induction of CA and during CPR. The RV diameter was measured two centimeters from the aortic valve at end diastole (Figure 1). CPR was performed according to the European Resuscitation Council 2010 guidelines. tPTX was decompressed after 7 cycles of CPR. The primary endpoint was RV diameter after 3 cycles of CPR and the secondary endpoint was RV diameter at CA. Based on the primary endpoint of no difference an equivalence power analysis based on a 20% (6 mm) equivalence margin, sd = 4.3, a 5% two-sided significance level, 80% power, and a 1:1 sample size ratio demonstrated that 9 animals were needed in each group

Results
At baseline the RV diameter was (mean (95%CI)): 24.2 (21.1-27.4) mm in the tPTX group and 24.2 (20.6-27.8) mm in the hypoxia group (Figure 2). Induction of CA, elicited a decrease in RV diameter in the tPTX group to 16.8 (13.0-20.6) mm and an increase in the hypoxia group to 36.2 (32.5-40.0) mm (p-value at CA compared to baseline p<0.01 and between groups p<0.01). After three cycles of CPR, RV diameter was significantly smaller in the tPTX group at 11.8 (7.3-16.2) mm when compared to the hypoxia group at 28.2 (24.5-31.9) mm (p<0.01)(Figure 1). Immediately after decompression no difference existed between groups: tPTX 28.9 (23.4-34.3) mm vs. hypoxia 29.2 (20.1-38.2) mm (p=0.94).

Conclusion
Cardiac arrest caused by tPTX results in a significantly smaller diameter of the RV compared to hypoxia at the onset of CA. This difference persists during CPR, enabling focused cardiac ultrasound to detect tPTX as a reversible cause of CA.





Abstract 4

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Overskrift Does feedback on CPR quality in AEDs increase survival after out-of-hospital cardiac arrest?

Introduction:
Knowledge concerning the effect of feedback mechanisms in automated external defibrillators (AEDs) on clinical outcome is limited. We hypothesized that out-of-hospital cardiac arrest (OHCA) victims would have a higher proportion of return of spontaneous circulation (ROSC) on admission to hospital and 30-day survival if bystanders used an AED with audiovisual feedback or a metronome compared to an AED without feedback mechanisms.

Methods:
In a 3-year period, we collected data on OHCAs in the Capital Region of Denmark (population 1.7 million) with an AED applied prior to ambulance arrival. AED data were obtained from the Emergency Medical Dispatch Centre and patient data retrieved from the Danish Cardiac Arrest Registry and from medical records. Feedback on depth and compression rate was verified by the electrocardiograms downloaded from the AEDs.

Results:
A total of 198 OHCAs had an AED applied before ambulance arrival; of these 62 (31%) provided audiovisual feedback (Table 1) and 140 (71%) used a metronome (Table 2). We found no difference in ROSC according to audiovisual feedback, 55% (95% CI, 43-67%) vs. 54% (95% CI, 46-63%, p=0.96) and no difference in 30-day survival, 39% (95% CI, 28-51%) vs. 42% (95% CI, 34-50%, p=0.67), respectively. We found no difference in ROSC according to use of a metronome, 56% (95% CI, 48-64%) vs. 50% (95% CI, 38-62%, p=0.41) and 30-day survival was not different, 41% (95% CI, 34-50%) vs. 40% (95% CI, 28-53%, p=0.82), respectively. Moreover, we found no difference in the proportion of ROSC when AEDs with both audiovisual feedback and metronome were applied compared to AEDs without feedback mechanisms, 55% (95% CI, 43-67%) vs. 50% (95% CI, 38-62%, p=0.60) and no difference in 30-day survival, 39% (95% CI, 28-51%) vs. 40% (95% CI, 28-53%, p=0.92), respectively.

Conclusions:
No significant difference in the rate of ROSC or 30-day survival could be detected if an AED with feedback mechanism was used in OHCA victims.

Table 1

Out-of-hospital cardiac arrest with deployment of automated external defibrillators from October 27, 2011 to October 26, 2014

	Audiovisual feedback from AED (n=62)*	No audiovisual feedback from AED (n=136)*	p-Value
Age, median [25-75%], years	66 [49-76]	69 [58-81]	0.11
Male sex, n (%)	41 (66)	89 (65)	0.93
Bystander witnessed, n (%)	32 (52)	73 (54)	0.46
Bystander CPR, n (%)	59 (95)	129 (95)	0.93
Initial shockable rhythm, n (%)	30 (48)	65 (48)	0.94
EMS response time**, median [25-75%], minutes	5 [4-7]	6 [4-8]	0.17

AED, automated external defibrillator; CPR, cardiopulmonary resuscitation; EMS, emergency medical services.

*Number of patients with missing value for the variable Bystander Witnessed: "AED providing audiovisual feedback" n=13 (21%) and "AED without audiovisual feedback" n=38 (28%). **Time from ambulance dispatch to arrival on scene.

Table 2
Out-of-hospital cardiac arrest with deployment of automated external defibrillators from October 27, 2011 to October 26, 2014

	AED with CPR metronome (n=140)*	AED without CPR metronome (n=58)*	p-Value
Age, years [25-75%]	66 [54-77]	72 [60-82]	0.05
Male sex, n (%)	96 (69)	34 (59)	0.18
Bystander witnessed, n (%)	77 (55)	28 (48)	0.14
Bystander CPR, n (%)	130 (93)	58 (100)	0.04
Initial shockable rhythm, n (%)	71 (51)	24 (41)	0.23
EMS response time**, median [25-75%], minutes	5 [3-8]	6 [4-8]	0.05

AED, automated external defibrillator; CPR, cardiopulmonary resuscitation; EMS, emergency medical services.
*Number of patients with missing value for the variable Bystander Witnessed: "AED with CPR metronome " n=30 (21%) and "AED without CPR metronome" n=21 (36%). **Time from ambulance dispatch to arrival on scene

Abstract 16

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Overskrift Breathing difficulties entails high mortality in patients calling the Emergency Medical Communication Center – a population-based follow-up study

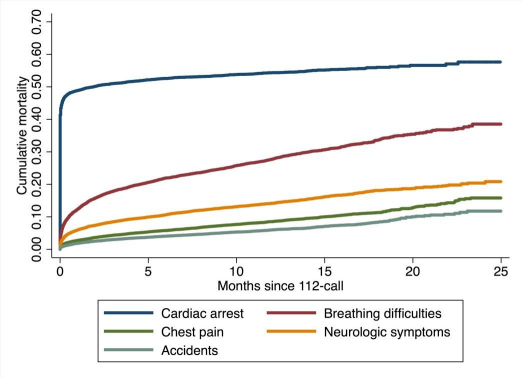
Introduction
Previous studies have demonstrated a high mortality in selected patients with dyspnea in the prehospital setting. In June 2011, a criteria-based Nationwide Emergency Medical dispatch System was implemented in Denmark. Ambulance dispatch urgency is now based on the presenting symptom according to Danish Index for Emergency care as assessed by health personnel in the Emergency Medical Communication Center (EMCC). For the first time, this allows for evaluation of patient outcome based on the presenting symptom in unselected patients calling the EMCC. The aim of this study was to compare mortality in an unselected group of patients contacting the EMCC because of breathing difficulties to that in patients presenting with other symptoms.

Methods
Register-based follow-up study among unselected EMCC-callers from the Central Denmark Region, Southern Denmark Region and Capital Region of Denmark from June 1 2011 to December 31 2012. We divided patients into groups according to cause of EMCC-call and used a generalized linear regression model to calculate age- and comorbidity adjusted relative risks (RR) for mortality at 1 day, day 7, day 30 and 1 year from the index event.

Results
A total of 142,043 contacts in unique individuals were included in the study. Of these, 9,644 (6.8 %) individuals suffered from breathing difficulties. The unadjusted mortality in all EMCC-callers was 3.1% (95% CI 3.1-3.2%) at day 1, 4.3% (95% CI 4.2-4.4%) at day 7, 6.0 % (95% CI 5.9-6.1%) at 30 days and 13.0% (95% CI 12.8 – 13.1%) at 1 year. The unadjusted mortality in patients with breathing difficulties was 4.6% (95% CI 4.2-5.0) at day 1, 8.0% (7.5-8.6%) at day 7, 12.4 (95% CI 11.7-13.0 %) at day 30 and 27.7 (95% CI 26.7-28.6 %) at 1 year. Kaplan-Meier cumulative mortality curves for selected symptom groups among 112 callers are displayed in figure 1. Adjusted for age and comorbidity, the group of patients with breathing difficulties had a higher mortality than the group of other EMCC-callers at day 1 (RR 1.005 (95% CI (1.001 – 1.009)), day 7 (RR 1.024 (95% CI 1.018 – 1.029) and day 30 (RR 1.044 (95% CI 1.037 – 1.051)). This difference was consisten t at 1-year follow-up (RR 1.10 (95% CI 1.09 – 1.11)).

Discussion
Breathing difficulties in the prehospital setting should be regarded as an important predictor of mortality. It appears warranted to further examine whether making the right diagnosis and giving the right treatment to the right patient earlier can improve outcome in this patient group.

Conclusion
EMCC-callers with breathing difficulties have a high mortality compared to other EMCC-callers. More research on prehospital management of this patient group seems needed.



Abstract 47

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Overskrift Improved coagulation competence in patients with a ruptured abdominal aortic aneurysm randomized to preoperative administration of platelets: a START trial subgroup analysis

Background:
In patients undergoing surgery for a ruptured abdominal aortic aneurysm (rAAA), survivors demonstrate a high platelet count and pro-active administration of platelets (and fresh frozen plasma) seems to reduce perioperative mortality for these patients. We evaluated the effect

of early administration of platelets on coagulation competence and perioperative hemorrhage in a subgroup of the patients included in the START trial.

Methods/Design
In a prospective study (START) patients were randomized to receive two units of platelets concentrate (intervention) or no platelets (control) before transport to the vascular surgical departments at Odense University Hospital or Rigshospitalet (Trial registration: ClinicalTrials.gov NCT0129129). When patients arrived at the operating theatre at Rigshospitalet (n = 84), blood was obtained for evaluation by thrombelastography (TEG) and determination of plasma coagulation variables.

Results
Blood was analysed in 28 patients allocated to intervention and in 34 patients randomized to control. Preoperative administration of platelets increased the platelet count (172 (148-197) to 230 (195-264) *109, P = 0.0076). TEG-determined "maximal amplitude" (59.0 (54.4-63.5) to. 65.2 (62.1-68.4) mm; P = 0.0305) also increased while changes in "R-time" (6.7 (5.7-7.6) vs. 5.6 (4.9-6.4) min, P = 0.0850) and "Angle" (62.2 (57.9-66.5) vs. 67.4 (64.0-70.9)°, P = 0.0660) by early administration of platelets did not reach statistical significance. Also lysis after 30 min was similar [0.4% (0.06-0.81)] in the intervention and control patients [1.6% (-0.07-3.36)] (P = 0.1686), and international ratio [(1.50 (1.12-1.77) vs. 1.47 (1.18-1.75), P = 0.8495)] were similar in the two groups of patients. The intraoperative blood loss volume was ≈1 l higher in controls compared to the intervention patients but the difference failed to reach statistical significance (6877 (5179-8575) vs. 5895 (4747-7042) ml, P = 0.3335).

Conclusion
In patients presenting with a ruptured abdominal aortic aneurysm who were allocated to administration of platelets ahead of transport to vascular surgery, the function of whole blood thrombocytes was improved when the patients arrived at the operating theatre, but that did not affect the perioperative blood loss significantly.

Abstract 50

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Overskrift	Preoperative administration of platelets to patients with ruptured abdominal aortic aneurysm: results from a prospective, randomised study (START trial)

Background
In patients undergoing surgery for a ruptured abdominal aortic aneurysm (rAAA), survivors demonstrate a high platelet count and pro-active administration of platelets (and fresh frozen plasma) seems to reduce perioperative mortality for these patients. The START trial investigates the effect of platelets administered before transport to surgery on postoperative mortality and morbidity.

Methods/Design
In a prospective study patients were randomized to receive two units of platelets concentrate (intervention) or no platelets (control) before transport to the vascular surgical departments at Odense or Rigshospitalet. Eleven local hospitals delivered patients to the study. Outcome parameters were mortality thirty days after surgery, organ failure and length of stay in the intensive care unit.

Results
One-hundred-twenty-five patients allocated to intervention (n = 63) or control (n= 62) were transferred from a local hospital to the operating theatre at Odense or Rigshospitalet. Transport time from randomization at local hospital to arrival at the operating theatre at one of the university hospital was 510 (202-817) minutes in intervention and 448 (153-744) minutes in control (P = 0.7737). Postoperative occurrence of thrombotic events (14 vs. 15, P = 0.835), renal failure (37 vs. 45, P = 0.1342) and pulmonary insufficiency (14 vs. 16, P = 0.1605) were similar in the two groups. The length of stay in the intensive care unit was unaffected by intervention (13 vs. 8 days, P = 0.1738). Thirty days after surgery mortality was 35% for patients in intervention vs. 30% for controls (P = 0.704).

Conclusion
In a randomized clinical trial a high postoperative survival was maintained in patients with a ruptured abdominal aortic aneurysm and the occurrence of complications remained unaffected by administration of platelets 1-4 hrs before surgery.