

Cardiac tamponade is the major cause of death in stanford type A acute aortic dissection: Insight from unenhanced post-mortem computed tomography

Authors:

Y. Tanaka¹, S. Kojima², K. Sakata¹, T. Nakamura², Y. Sakurai³, Y. Morishita⁴, O. Nara⁴, I. Takahashi⁴, M. Hirokami², M. Yamagishi¹, ¹Kanazawa University Hospital, Cardiology - Kanazawa - Japan, ²Teine Keijinkai Hospital, Cardiovascular center - Sapporo - Japan, ³Teine Keijinkai Hospital, Radiology - Sapporo - Japan, ⁴Teine Keijinkai Hospital, Emergency Department - Sapporo - Japan,

Topic(s):

CPR (cardiopulmonary resuscitation)

Citation:

European Heart Journal (2014) 35 (Abstract Supplement), 829

Background: The incidence and cause of death in type A acute aortic dissection (AAD) are little known because of the feature of sudden death and the difficulty in diagnosis. Nowadays, autopsy images, such as unenhanced postmortem computed tomography (uPMCT), is gradually accepted and expected to detect the actual state of sudden death in emergency department (ED).

Purpose: The purpose of this study is to reveal the incidence and cause of death in patients with type A AAD who were transferred to ED due to cardiopulmonary arrest (CPA) and dead in ED.

Methods and results: From April 2009 to March 2012, consecutive 529 patients who were transferred to ED due to CPA were retrospectively reviewed. After trauma and suicide cases were excluded, total 283 patients underwent uPMCT in ED. Among them, 28 patients (9.9%) were diagnosed type A AAD by uPMCT (non-survivors). Visible intimal flap was detected in 13 patients (46.4%), intramural hematoma was in 18/27 (66.7%), and bloody pericardial effusion was in 26 (93%). Bloody pericardial effusion alone was in just 4 patients (14.3%). To evaluate risk factors associated with death in ED, 23 patients survived type A AAD in ED during the same period (survivors) were also analyzed. Bloody pericardial effusion was observed more frequently in non-survivors than survivors (90.3% vs. 36.8%; P<0.001). Logistic regression analysis revealed that bloody pericardial effusion was an independent risk factor for death in ED (Odds ratio =9.57; 95% CI, 1.43-63.8; P=0.020)

Conclusion: In patients with CPA, around 10% of the patients had Type A AAD and its major cause of death was cardiac tamponade. The evaluation of cardiac tamponade in patients with CPA is crucial in emergency department.

Prognostic risk factors in type A AAD

Methods	Univariate analysis				Multivariate analysis			
	OR	Lower 95% CI	Upper 95% CI	P value	OR	Lower 95% CI	Upper 95% CI	P value
Age	1.05	1.00	1.09	0.044	1.05	0.97	1.14	0.253
Gender	2.86	0.88	9.25	0.080	7.06	0.94	52.9	0.057
Diameter of AA	0.94	0.89	1.00	0.066	0.92	0.84	1.01	0.075
IMH of AA	3.74	1.11	12.7	0.034	3.90	0.67	22.8	0.130
Bloody pericardial effusion	16.0	3.53	72.6	<0.001	9.57	1.43	63.8	0.020

AAD indicates acute aortic dissection; OR, odds ratio; CI, confident interval; AA, ascending aorta; IMH, intramural hematoma.