

Paramedic CAT (Critically Appraised Topic) Worksheet

Title: Precordial Thump in Out-of-Hospital Cardiac Arrest (OOHCA)

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Clinical Scenario: A paramedic crew has responded to the home of a 70 y/o female complaining of weakness. Inside the home, they find the patient to be weak, diaphoretic, and complaining of nausea. The patient is hypotensive at 80/64 and her radial pulse is weak and rapid. Suddenly, the patient becomes unresponsive. One paramedic checks a pulse and cannot find one. The other paramedic is rushing to get the defib cables out of the defibrillator, which has not yet been turned on, and is also reaching for the oxygen tank and bag mask. Should the paramedic who is by the patients side perform a precordial thump, striking her in the chest, in the hopes of converting the rhythm to a more stable one?

PICO (Population – Intervention – Comparison – Outcome) Question:

P – adult OOHCA patients where the CA is witnessed by EMS

I – precordial thump

C – standard CPR

O – ROSC or rhythm conversion

“In adult OOHCA patients where the CA is witnessed by paramedics, does precordial thump versus standard CPR lead to differences in return of spontaneous circulation or rhythm change?”

Search Strategy: Pubmed: ((fist-pacing) OR (fist pacing) OR (precordial thump) AND (“Heart Arrest”[MeSH - Majr]) OR "cardiac arrest")

Search Outcome: 27 hits

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Relevant Papers:

AUTHOR, DATE	P (SAMPLE CHARACTERISTICS)	DESIGN (LOE)	OUTCOMES	RESULTS	WEAKNESSES
Caldwell (1985)	In-hospital & EMS pts All unconscious CA tx with PT	Prospective cohort (no control group) (LOE II)	Success of PT = rhythm conversion Survival to discharge	316 pts enrolled (86 EMS) PT successful in 26 incidents (23 pts), 15 surviving to discharge	Frequency of unsuccessful PT not reported Some pt treated in-hospital
J. Miller (1984)	OOHCA – PT administered when medics witnessed rhythm deteriorate to VT or VF	Case series (no control group) (LOE II)	Rhythm change	50 pts enrolled 27 pts rec'd PT for VT: 3 converted to SVT (1 was PEA), 12 had no rhythm change, 12 went into worse rhythm. 11 were successfully resus by other measures 23 pts rec'd PT for VF: 0 had rhythm change. 12/23 successfully resus by other measures.	No comparison group.
Ahmar (2007)	OOHCA witnessed by paramedics	Case Report (LOE III)	Rhythm change	No change in rhythm or clinical condition (subsequent countershock = ROSC). Later dx with fx sternum and osteomyelitis	Case report, no comparison, could be an usual event.

Comments: These three reports do not provide very supportive evidence for the use of precordial thump in witnessed cardiac arrest by paramedics. The incidence of PT converting a fatal rhythm to a better one is low (Caldwell = 26 events/316 pts; Miller = 2/50). Ahmar wrote of a case where the PT lead to a poor outcome for the patient.

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Clinical Bottom Line: As there is a lack of supporting evidence for the effectiveness of PT, and some evidence that it does not work, any may cause harm, it should not be used in witnessed cardiac arrest by paramedics. It would be better for paramedics and other health care providers to focus on quick initiation of high quality CPR and defibrillation.

References:

Ahmar, W., Morley, P., Marasco, S., Chan, W., & Aggarwal, A. (2007). Sternal fracture and osteomyelitis: An unusual complication of a precordial thump. *Resuscitation*, 75(3), 540-542.

Caldwell, G., Millar, G., & Quinn, E. (1985). Simple mechanical methods for cardioversion: Defence of the precordial thump and cough version. *British Medical Journal*, 291(6496), 627-630.

Miller, J., Tresch, D., Horwitz, L., Thompson, B. M., Aprahamian, C., & Darin, J. C. (1984). The precordial thump. *Annals of Emergency Medicine*, 13(9 Pt 2), 791-794.