What is the predictive value of tachycardia in children with abdominal pain?

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Background

Abdominal pain is a common cause of emergency department (ED) visits, with symptoms aspecific for disease severity.

Aim

To identify the predictive value of tachycardia for serious illness in children with abdominal pain.

Methods

- Part of the TRIAGE project, a prospective observational study
- Children with abdominal pain attending 5 different European ED’s.
- Routine data collection
- Primary outcomes
 - hospital- and ICU admission.
- Multivariate logistic regression

Results

baseline characteristics	n = 6894	Range ED's
male (%)	49,3	(45,9 - 57,9)
female(%)	50,7	(42,1 - 54,1)
age, in years (median; IQR)	7,9	(4,3 - 11,7)
vital signs at triage (%)		
fever (≥ 38,0 °C)	10,6	(6,7 - 17,8)
tachycardia according to APLS	17,5	(14,5 - 24,2)
tachypnoea according to APLS	16,2	(9,6 - 26,6)
capillary refill time abnormal (≥2s)	1,2	(0,85 - 4,8)
saturation below 94%	0,3	(0,03 - 0,54)
MTS painscore (%)		
severe pain (8-10)	4,0	(1,9 - 18,8)
moderate pain (5-7)	20,8	(18,8 - 32,4)
mild pain (1-4)	60,8	(38,9 - 71,4)
no pain (0)	14,4	(5,7 - 16,3)
admission rates (%)		
General admission	11,4	(5,1 - 26,4)
ICU admission	0,5	(0,0 - 1,7)

Predictive value of tachycardia - hospitalization		
total population	hospitalization	ICU admission
OR univariate	1,87 (1,55 - 2,27)	2,68 (1,31 - 5,47)
OR multivariate*	1,57 (1,23 - 2,00)	5,09 (2,11 - 12,31)
sensitivity	18% (16% - 20%)	1% (1% - 2%)
specificity	89% (88% - 90%)	100% (99% - 100%)
*adjusted for: temperature, gender, age, pain score, hospital of attendance and MTS urgency category.		

Conclusion

- Corrected for disease severity, tachycardia in children with abdominal pain is associated with hospitalization and ICU admission
- Due to limited sensitivity, tachycardia is not feasible as a triage instrument. Tachycardia can rule in children at risk for hospitalization
- Heart rate measurement can be valuable in children with abdominal pain at the ED