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Chest pain in the pediatric emergency department: can we improve management?

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Introduction: No precise recommendations exist as to the management of chest pain in children. Admissions in the pediatric emergency room with this symptom are increasing. The aim of our study was to analyze etiology and management of chest pain in our pediatric emergency department. The additional purpose was to elaborate an algorithm for future management.
Methods: Retrospective analysis of all children admitted with chest pain (main symptom), between 01-2014 and 05-2015, in our pediatric emergency department. Continuous variables were expressed as mean + SD. Univariate analyses were performed using Chi2 test or Fisher exact test, to analyze relationships between qualitative variables. A p value < 0.05 was considered as significant.
Results: 224 children were included (0.5% of total admissions). Sex ratio was 1.17 (M/F). Mean age was 10,5 + 3,35 years (range 3 to 18 years). In addition to detailed clinical history and examination, following tests had been performed: ECG (98.2%), chest X-ray (91,5%), general blood tests (59.8%), troponin (55,4%), myoglobin (42%), CPK (19,2%), BNP (14,3%), echocardiography (20.1%). The % of abnormal tests was as follow: ECG 6,4%, chest X-ray 9,3%, general blood tests 8.9%, troponin 4.8%, myoglobin 3.2%, CPK 6,3%, BNP 0%, echocardiography 13,3%. Final diagnosis was: musculo-parietal (59.8%), psychogenic (15.2%), digestive (11.2%), pulmonary (7.1%), cardiac (3.1%, n=7) and potentially cardiac (3.6%, n=8). The 7 confirmed cardiac etiologies consisted of 3 pericarditis, 3 worsening of pre-existing cardiac disease and 1 abnormal right coronary artery implantation. No significant difference in % of ECG and enzyme levels performed was found between the different groups. Based on our findings we elaborated a new algorithm with retrospectively high sensitivity and reduced use of non-clinical tests. Additional test will be limited to those patients with warning personal or family history, abnormal cardiovascular examination or abnormal ECG.
Conclusion: Frequency of admissions, age distribution and etiologies are similar to those described in the literature. Cardiac causes remain very rare. Too many unnecessary tests are performed. A new algorithm has been elaborated in order to remain highly sensitive but to reduce unnecessary tests. Clinical and financial interest of this algorithm will need to be tested.