A high sensivity troponin above cut off early after ER admission as predictor of high short-term mortality

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Objective

Troponin is the biological marker of choice for diagnosis of acute coronary syndrome, since it is produced and released only by myocardial cells and elevated circulating levels are found in any pathological situation in which there is a heart damage. Moreover troponin is known to be a marker of higher mortality, but the effect of the recent introduction of a new ultrasensitive troponin assays has yet to be clarified. Aim of the study: to assess the role of our ultrasensitive troponin assay in predicting short-term mortality in a ED setting.

Methods

From October 2009 to January 2010 we retrospectively analyzed patients admitted to ER and requiring troponin assays (troponin I AIA 360, TOSOH) according to hospital protocols and physician sight and we assessed the mortality at 90 days.

Results

1658 patients met the inclusion requirements, 227 (13,7%) of whom had a troponin above the cut off set by our internal procedure (0.06 ng/ml) at the sample collected just after the ER admission visit and were immediately handled according to initial diagnosis whereas 40 (2,4%) showed an above cut off troponin in a subsequent sample. The mortality at 90 days in the first group was 13,7% vs 7,5% in the last group (p<0,01). The 90-day mortality was higher in female (16,9%) and in patients suffering from disease other than acute coronary syndrome (23,5%), irrespectively of age and troponin levels above the cut off.

Conclusions

High sensitivity troponin assay above the cut off seems to be a good predictor of short-term mortality independently from levels and especially in female and for diagnosis other than acute coronary syndromes.

Treatment of pulmonary embolism with low molecular height heparin: our experience

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Background: Low molecular weight heparin (LMWH) is a relatively new treatment for pulmonary embolism (PE).
Objective: In this study we aimed to investigate our experience with such a therapy. Methods: We retrospectively evaluated the records of 57 patients with acute PE. Analysis involved demographic characteristics, severity of symptoms, diagnostic methods, echocardiography data, ECG signs, presence of deep vein thrombosis (DVT), outcome, 30 days follow-up. Results: From 1/1/2008 to 31/12/2010 57 patients were admitted to our department for PE: 43 women (75%) and 14 men (25%). The average age was 75 years (from 19 to 87); the most frequent presentation symptom was dyspnea (82%), whereas syncope was present in 12%. On admission 7% had hypotension (systolic pressure < 90 mmHg); 19% had severe tachycardia (cardiac frequency > 120 b/min); 23% had hypoxia (O2 saturation < 90%); 21% had dilatation of the right ventricle, 23 pts. had DVT (40,3%). In 11 pts. (19,3%) the PE was idiopathic, in 46 was secondary (80,7%). In 45 cases (79%) the diagnosis was made with spiral chest computed tomography pulmonary angiography (CTPA), in 12 (21%) ventilation perfusion lung scan was performed. All pts. received LMWH, in 3 cases inotropes (dopamine) were used to reach hemodynamic stability. Two (4%) patients died, and we had 3 (5%) major hemorragic complications. 79% of the pts. were discarged with oral anticoagulation. The mean length of hospital stay was 6,4 days (1 to 14). At 30-days follow-up we observed 2 (4%) re-admission for respiratory problems. **Conclusions:** In our experience treatment of PE with LMWH was safe and effective and according to the most recent international literature.

The role of bedside ultrasound in the diagnosis and outcome of patients with acute respiratory failure

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Background

The impact of bedside ultrasound in the diagnosis and outcome of patients with acute respiratory failure is not well known.

Methods

This was a retrospective observational study conducted in the Emergency Departments (EDs) of two Hospitals of Como (Sant'Anna Hospital and Valduce Hospital) over two years, investigating 256 consecutive adult patients with acute respiratory failure. 108 patients (group A) had immediately a bedside ultrasound diagnostic test by expert investigastors at the time of ED admission, whereas 120 patients (group B) were evaluated and managed without a preliminary ultrasound diagnostic approach. The aim of our study was to evaluate the relationship between a bedside ultrasound evaluation in the acute setting and the patient's outcome and diagnosis.

Results

In-hospital mortality was significantly lower in group A compared with group B, respectively: 2 (1.8%) versus 6 (5%), $p < 0.01$. In group A only nine patients (8.3%) compared with seventeen patients of group B (14.1%), $p < 0.01$, were transferred to the ICU for monitoring and treatment; finally, the concordance between the initial and final diagnosis was statistically significant in group A.

Conclusions

Our results show that the use of a bedside ultrasound in the ED at the time of the admission of patients with acute respiratory failure is strongly recommended, because it provided an accurate diagnosis and it might be directly related to the patients' improved outcome.

The role of continuos positive airway pressure in acute cardiogenic pulmonary edema with preserved left ventricular systolic function: a preliminary study

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Objective

To compare the effect of continuous positive airway pressure (CPAP) in patients with acute cardiogenic pulmonary edema (ACPE) with preserved or impaired left ventricular systolic function with regard to resolution time.

Methods

In a prospective, preliminary observational cohort study, eighteen patients with preserved left ventricular systolic function (group A) and eighteen patients with systolic heart dysfunction (group B) with acute cardiogenic pulmonary edema, underwent CPAP (10 cm H20) through a face mask with standard medical therapy after a morphological echocardiographic investigation shortly before CPAP.

Results

Resolution time did not differ significantly between the two group of patients (64±25 min in diastolic group versus 80±33 min in systolic group). One patient in preserved left ventricular systolic function group required endotracheal intubation (not statistically significant). No patients died during hospital stay. Arterial blood gases improved after a trial of CPAP in both group of patients.

Conclusions

The results of this preliminary study show that resolution time is not significantly different in patients with ACPE with preserved or impaired systolic function submitted to CPAP.

Boussignac CPAP for acute hypoxaemic respiratory failure in community acquired pneumonia: use in a general medical ward

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Background

Hypoxaemic acute respiratory failure due to severe community acquired pneumonia may lead to acute respiratory distress syndrome. Non invasive ventilation may improve blood gases and clinical parameters if compared with conventional oxygen therapy but do not affect survival and need of intubation.

Aim

To verify the effect of a simple CPAP (continuous positive airway pressure) device (Boussignac) in patients with hypoxaemic acute respiratory failure due to severe community acquired pneumonia in a general medical ward.

Methods

20 patients with PaO2/FiO2 <160 in conventional oxygen treatment (Venturi mask FiO2 60%) were enrolled and treated with Boussignac CPAP: mean pressure was 9 cm H2O, mean FiO2 74%. All patients received conventional medical treatment at the same time.

Results

14 patient improved in clinical (respiratory rate, Kelly score, heart rate, Figure 1) and gasanalytic parameters (Figure 2) since the first hour of treatment ($p < 0.05$). 6 patients need intubation and conventional invasive ventilation in intensive care unit: 2 of these died.

Conclusions

Boussignac CPAP, a simple device, may be useful in general medical ward to treat hypoxaemic acute respiratory failure due to severe community acquired pneumonia unresponsive to conventional oxygen therapy.

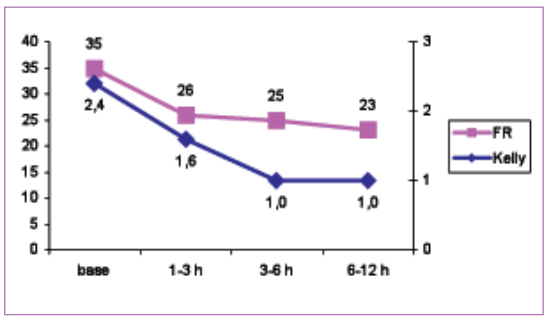

Figure 1. Clinical parameters during CPAP treatment.

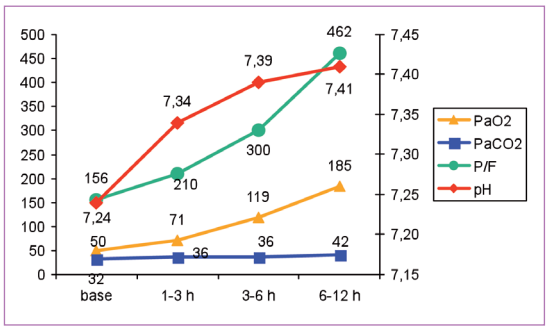

Figure 2. Gasanalytic parameters during CPAP treatment.

The management of acute respiratory failure in general medical wards: the development of a bedside trolley

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Background

In the last years Non-Invasive Ventilation (NIV) has reached an important role in the treatment of Acute Respiratory Failure (ARF), improving clinical features and arterial blood gases and in particular clinical conditions, such as Acute Cardiogenic Pulmonary Edema and acute exacerbation of Chronic Obstructive Pulmonary Disease, decreasing the need for intubation and in-hospital mortality compared to standard medical treatment. NIV's success seems to be determined by early application, staff training and a good organization of the setting. Although the first important data on NIV are from studies performed in Intensive Care Units (ICUs), subsequently these methodologies of ventilation have been successfully used in Emergency Departments and general medical wards as a result of an increasing number of elderly patients with various chronic diseases, complicated clinical conditions in which endo-tracheal intubation (ETI) lead to poor outcomes (immunodeficiency, neoplasm ecc.), a lack of bed places in ICUs.

Aim

In order to improve the organization of the ward, to optimize the treatment of patients with ARF we developed a trolley for NIV in which all the devices for ventilation, oxygenation, aerosol therapy are easily and quickly available at the bedside of the patient (Figure 1).

Methods

In the rear panel we attached two IV drip poles used for IV therapy but also used to sustain two Venturi – like flow generator for CPAP (Continuous Positive Airway Pressure) with oxymeters. On the top two ventilators are present, a smaller one (domiciliary) and a bigger one (ICU ventilator): they are able to perform different kinds of ventilation such as controlled (pressure and volume, generally used for intubated patients), assisted/controlled, SIMV (synchronized intermittent mandatory ventilation), PSV+PEEP (Pressure Support). In the front panel there are 4 drawer. In the first one there are sets to draw venous or arterial blood sample, a pulse oxymeter and essential drugs (IV diuretics, IV steroids, short acting beta 2 agonists). In the second drawer we put simple oxygen therapy devices: nasal prongs, Venturi masks, reservoir masks, aerosol kits, 2-15 L/m flow meters. In the third drawer we find CPAP complements such as facial masks, PEEP valves, circuits. In addition a complete Boussignac CPAP system is present: 2-30 L/m flow meter, Boussignac devices, a manometer. In the last drawer are present complements for ventilators: circuit, nasal masks, facial masks, total face masks, helmets, aerosol kits. A check list is verified every day.

Results

The management of every kind of ARF results simpler, easier and safer with this trolley: every device needed is promptly disposable at the bedside of the patient and useless lacks of time are avoided.

Conclusions

This bedside NIV trolley, as far as the emergency trolley, could be useful in general medical ward lacking in critical care areas in order to improve interventions in patients with ARF.

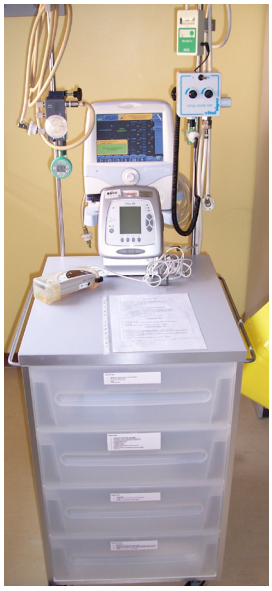

Figure 1. Bedside trolley for acute respiratory failure

Arterial Blood Gas Analysis to predict Outcome in Acute Cardiogenic Pulmonary Oedema treated with Non-invasive Positive Pressure Ventilation

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Background

Noninvasive positive pressure ventilation (NIPPV) is a first line intervention in Acute Cardiogenic Pulmonary Oedema (ACPO): robust evidence supports the efficacy and safety in reducing the need for endotracheal intubation (ETI) and mortality.
Emergency Physicans (EP) need objective parameters as an adjunct to clinical judgement when deciding on managing Acute Respiratory Failure (ARF). Arterial Blood Gas Analysys (ABG) is largely available in clinical practice in the Emergency Department (ED) and showed promise to predict outcome in ARF treated with NIPPV.

Aims

To assess the role of ABG, since the early phases in the ED, in recognizing the response to treatment of carefully selected and controlled patients with ACPO treated by NIPPV, and to predict the outcome.

Materials and Methods

Outcome as treatment failure was defined as hospital mortality and/or need for ETI and invasive mechanical ventilation at any time.
Observational, prospective clinical study in the ED in a University teaching Hospital, during 5 months, including every patient emergently admitted for ACPO according to EP early clinical indication to first-line NIPPV (referring to an institutional protocol). Blood gas samples were evaluated at baseline just after admission, and in the early (1 to 6 hours) phase of follow up.

Results

214 patients (media 1.42 / day) were included. Failure rate was 14.5% and success 85.5%. Results are showed in Table 1 and Table 2

Table 1. ABG parameters at time 0'.

ABG - 0		
	Failure	Success
Media (median, min, max)		
PaO_2	57.6 (53.7, 33.6, 126)	61.8 (56, 21, 154.7)
pH	7.330 (7.317, 7.146, 7.520)	7.323 (7.329, 7.017, 7.549)
$PaCO_2$	50.6 (39.4, 27.5, 120)	51.8 (47.8, 20.5, 123.3)
HCO_3^-	25 (23, 13.1, 40.5)	25.6 (25.1, 12.3, 41.9)
SaO_2	83.6 (88.8, 57.9, 100)	85.6 (87.8, 29.4, 99.8)
FiO_2	0.29 (0.21, 0.21, 0.6)	0.31 (0.27, 0.21, 0.9)
P/F	211 (196, 104, 382)	211 (208, 42, 357)

Table 2. ABG parameters variation (delta) at time + 120'.

ABG Δt 120'		
(Δ 120'-0)	Failure	Success
Δ Pa_{O2}	12.6 (22.1, -37.8, 30,1)	15.3 (13.7, -81.6, 89)
Δ pH	-0.030 (-0.021, -0.225, 0.097)	0.074 (0.061, -0.029, 0.213)
Δ $PaCO_2$	1.1 (1, -11.2, 16.5)	-8.2 (-6.9, -48.7, 2.1)
Δ HCO_3^-	-3 (-0.1, -25.2, 4.1)	1.2 (0.2, -5, 16.9)
Δ SaO_2	6 (8.9, -17.6, 18.3)	4.8 (6.8, -80.2, 28.2)
Δ P/F	-5 (-14, -63, 91)	12 (31, -126, 181)

Conclusions

Our data show that, in patients with ARF due to ACPO and treated with NIPPV, ABG at presentation is not able to carefully predict the outcome. After 60' of NIPPV both groups (success versus failure) improved in ABG parameters without any significant difference and with a similar delta. After 120' patients in the failure group stop sustaining the correction in gas exchange and the improvement in ABG parameters; we showed a significant delta increment in the success group. This trend is confirmed after 3 to 6 hours.
In well selected ACPO patients, NIPPV improves gas exchange and avoids ETI. The improvement of ABG after 120' initiating NIPPV is associated with success; these patients will likely benefit from continuation of NIPPV. The inability to improve gas exchange after 120' of NIPPV in ACPO is predictor of failure; these patients should be closely monitored with a low threshold for ETI.

Observation units for syncope: an useful approach to a challenging symptom

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Introduction

Syncope is a frequent cause of emergency department (ED) visit. Sometimes, a great effort is needed to make an accurate diagnosis. The presence of an observation unit (OU) allows to perform a further evaluation of the patients with diagnosis of indeterminate syncope after ED visit.
Aim of the study: evaluate the differences in the admission rate and diagnosis of syncope by comparing the data from 2003 (from 1th January to 30th June; OU unavailable) and 2010 (from 1th January to 30th June; OU available since 2006).
Design: before-after study.
Setting: Emergency Department of a community-based, 700-bed hospital.

Patients and methods

The data of 2003 were extracted from the ED manual report. The data of 2010 were extracted from the AIRO (Area Informativa Ricoveri Ospedalieri) hospital software. In 2003: 25149 visits; syncope 681 (2.7%; M/F 316/365). In 2010: 20229 visits; syncope 398 (1.97%; M/F 211/187). Were admitted to the OU the patients with indeterminate syncope and one of more of the following: cardiac disease, age > 45 years, secondary trauma, abnormal ECG findings, orthostatic hypotension. All the patients had continuous ECG monitoring and routine blood tests. In patients with age > 65 years, the carotid sinus compression was performed. Further tests (head CT scan, myocardial necrosis markers, echocardiography, EEG) were performed in selected patients.

Results

In 2003 389/681 patients were admitted to the hospital wards (57.1%). In 2010 135/398 patients were admitted to the hospital wards (33.9%). The difference was statistically significant ($X^2 = 53.21$; $p < 0,00001$). In 2003 the following diagnosis were made: neurally mediated syncope 275 (40.3%); cardiogenic syncope 115 (16.8%); neurological syncope 30 (4.4%); orthostatic syncope 65 (9.5%); indeterminate syncope 196 (29%). In 2010 the following diagnosis were made: neurally mediated syncope 200 (50.2%); cardiogenic syncope 48 (12%); neurological syncope 23 (5.7%); orthostatic syncope 80 (20.1%); indeterminate syncope 29 (7.2%); non-syncopal transient loss of consciousness 18 (4.5%). The difference between 2003 and 2010 of the patients with diagnosis of indeterminate syncope was statistically significant ($X^2 = 66.53$; $p < 0,00001$).

Conclusions

Admitting selected patients with syncope to an OU with ECG monitoring allows to reduce the number of admitted patients to hospital wards (by diminishing the number of patients with the diagnosis of indeterminate syncope). Risk stratification is also more accurate after observation than after ED visit alone.

Short term prognosis of syncope and performance of some of existing CDRs to identify adverse outcomes versus physician judgment

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Objective

To evaluate short-term (10 days) adverse outcomes in syncope and to assess if existing clinical decision rules performe better than physician judgment in stratify the patient's risk in the Emergency Department.

Methods

We screened 255 consecutive subjects aged ≥ 16 years who presented for possible syncope at our Emergency Department between October and December 2010. We assessed short-term adverse outcomes (death, myocardial infarction, life-threatening arrhythmia, acute pulmonary embolism, hemorrhage requiring blood transfusion, pacemaker insertion, cerebrovascular accident, serious trauma, acute surgical procedures or endoscopic intervention) in all enrolled patients.

Results

After thorough work-up, 106 patients had neurally-mediated syncope (41.6%), 38 had orthostatic syncope (14.9%), 23 had cardiac syncope (9%), 1 had "neurologic" syncope (0.4%: a case of subclavian steal), 33 had unknown cause (12.9%) (Figure 1). A total of 201 patients were included in the study (54 patients, 21.2%, had non-syncopal TLOC and were excluded).

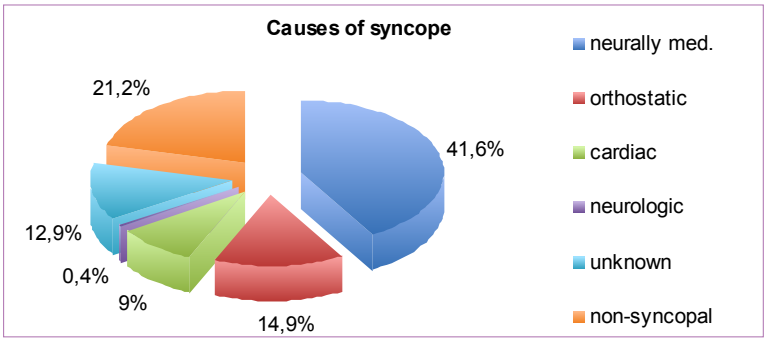

Figure 1. Causes of syncope in study population.

Hospital admission was decided for 65 patients (25.5%), whereas 187 patients (73.3%) were discharged.
Twenty-three patients of 201 (11.4%) experienced adverse outcomes in the 10 days after presentation: eight of them had not been identifyied in the ED (Table 1).

Table 1. Adverse events - 10 days observation.

Adverse outcome	Number of cases	Predictable in the ED?
Death	1	Yes
Hemorrhage	2	No for either
Pulmonary embolism	2	No for one
Myocardial infarction	2	Yes
Pacemaker	6	No only for one
Cerebrovasc. accident	2	No for either (1 discharged)
Trauma	4	Yes
Surgical procedures	4	No for 2 (1 discharged)

We retrospectively applied four Clinical Decision Rules (San Francisco Syncope Rule; ACEP Guidelines 2007; ESC Guidelines 2009; Risk Factors from the STePS study) to the eight patients whose adverse outcomes were not expected in the ED. We couldn't apply ROSE Study Risk Factors because we hadn't BNP concentration available for all the patients enrolled.
We found that none of CDRs can identify 100% of adverse outcomes: ACEP GL and STePS study Risk Factors identify 7 patients out of 8, SFSR and ESC GL 6 patients out of 8.
So the ED physician couldn't identify 8 adverse outcomes, whereas CDRs seem to performe better missing only 1-2 adverse outcomes; but actually only 2 patients were discharged directly from the ED, the others being admitted.
The two patients discharged had respectively a stroke after 6 days and a transient ischemic attack after 7 days.

Conclusions

In our experience (with the possible exception of ROSE study CDR) an absolute CDR to direct syncope admissions is not feasible, and no rule overrides physician judgment, supported by knowledge of existing Guide Lines (expecially ESC GL). Cardiac adverse outcomes are more easily predictable than the others.

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Can chest ultrasonography becomes the only imaging modality for minor thoracic trauma? A pilot study

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Objective

The aim of the study was to examine the concordance between chest ultrasonography (US) and chest radiography (RX) in the diagnosis of pneumothorax (PNX), and emothorax (ETX) in patients with mild thoracic trauma.

Methods

A pilot study was conducted in ED of two different hospitals. We enrolled 96 (41 females and 55 males) consecutive patients presenting to the ED for mild thoracic trauma from november 2008 to august 2011.
Inclusion criteria were: not penetrating minor energy trauma according to ATLS criteria, age above 16 years old, GCS 15, sPO2 > 95%, FR < 20, hemodynamically stable, not anticoagulated.
Chest US has been performed by trained emergency physicians at bedside in supine and in seated position, with linear probe (7,5-10 MHz) for PNX and with convex probe (3,5-5 MHz) for ETX. We consider the absence of gliding and presence of lung point as diagnostic of PNX and we defined the ETX as the detection of pleural fluid. X ray has been performed after US and in posteroanterior and anterolateral position.

Results

Because of the low incidence of PNX and ETX in this setting, the number of patient enrolled is unsufficient to estimate sensitivity and specificity of US, we limited our analysis to a description of results.
In 5 of the 96 enrolled patients (5,2%) PNX has been diagnosed. In 2 cases both US and RX detected complicated PNX with ETX; in other 2 cases both US an RX resulted positive for PNX; in 1 case US detected a small ETX missed by RX.

Conclusion

Our study suggests high concordance between US and RX in this group of patients. US could become the only routine imaging modality for patients with mild thoracic trauma, howewer further, multicentric studies are needed to confirm our suggestion.

NTproBNP role in chest pain early evaluation in an Emergency Department compared to TnThs

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We studied 79 patients who reached our Emergency Department (ED) for chest pain of suspected ischaemic origin (CP). On these patients it has been assayed TnT-hs (Roche-Elecsys 2010; normal value < 14 ng/l) and NTproBNP (Roche-Elecsys n.v. < 300 pg/ml). Assays has been taken at admission, after 3 and 6 hrs. "Old" TnT assay (Roche Elecsys) was also done. Clinical evaluation of CP has been made by Chest Pain Score (CPS) and showed a mean value of 5.7. Among these 79 patients, 70 had a CPS ≥ 4. Concerning to risk factors, TIMIs mean value was 1.5 as 36 patients had a TIMIs ≥ 2.
Among all the inspected patients, 8 have been increased TnT-hs values > 50% at the second assay after three hours and 3 others patients have increased their levels > 50% compared to the first assay at the 3rd sample. In 10 of these 11 patients new "hs" assay – in association with clinical criteria - allowed the diagnosis of Acute Coronary Syndrome (ACS) while the previously utilized TnT assay missed the diagnosis.
In these 11 patients NTpro BNP mean value on 1st sample was 608 pg/ml, but with a high variation rate (SD 690). After three hours (2nd sample) NTproBNP concentration raised on a mean of 18%, with only 1 case of increase over 50%, which is considered a significant threshold. Even considering 3rd sample just 3 patients have shown a significant increase of NTproBNP serum levels.
In another group of 13 patients it has been found (at 1st assay) a TnThs serum concentration beyond the cut-off value of 14 ng/l. During observation TnThs did not change significantly its levels at 2nd and 3rd sample. In this group TnT values have been considered related to other pathologies rather than ACS, and their levels were considered as signal of higher cardiovascular risk.
In this group basal serum NTproBNP levels have shown very high variability (mean: 3006 pg/ml; SD: 2989). The increase rate at 2nd and 3rd assay was too small to achieve clinical relevance.
This study, even if based on a narrow population, seems do not reveal any role – in terms of diagnosis accuracy and earliness – of measuring NTproBNP levels in case of suspected ACS.

Spontaneous retroperitoneal haematoma in acquired haemophilia syndrome

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Abstract

We present a case report of acquired haemophilia in a 73 years old woman presenting in Emergency Department with large retroperitoneal haematoma and acute anemia due to venous bleeding; the identification of this coagulation disorder and the availability of a specific treatment could effectively resolve this very uncommon pathological condition.

Case report

We evaluated a caucasian 73 years old woman presenting in Emergency Department because of appearance of a painful mass in right abdomen.
In anamnesis idiopathic arterial hypertension (in treatment with losartan) and diabetes mellitus (in treatment with metformine and glicazide); recent deep venous thrombosis in treatment with subcutaneous low molecular weght haeparin (LMWH), 100 UI per kg.
At admission BAP 100/60 mmHg, HR 130 bpm, SO2 98% at FiO2 21%, GCS 15, RR 25/min, TA 36C; clinical examination was normal except for mucous pallor and tense right abdomen mass. Electrocardiogram revealed sinusal rhythm and physiologic morphology, while arterial blood gas analysis was normal except for haemoglobin value of 81 gr/L.
Ultrasonographic bedside examination revealed presence of free-abdominal fluid, with inferior cava vein collassable at inspiration of about 25%. Fluid resuscitation and analgesic therapy (morphine 0,1 mg/kg) was started.
Contrast enhanced computed tomography of abdomen revealed a paravertebral and retroperitoneal haematoma (diameter 20 cm) with signs of venous bleeding.
Transfusion of three units of packed red cells was suddenly performed, while LMWH was interrupted. Surgical referral gave indication to medical therapy and clinical/radiologic follow up.
Biochemistry examination did not pointed out any pathological finding except for haemoglobin 92 gr/dl (after transfusion of 2 packed red cells units), and aPTT ratio 1,71 (0.8-1.2).
Completed coagulation study (Table 1), pointed out diagnosis of "acquired coagulation factor VIII deficiency"; therapy with concentrate of factor VIII, cyclophosphamide (900 mg weekly for four weeks), glucocorticoids (prednisone 1 mg/kg), protonic pump inhibitors was performed, with complete resolution of coagulation disorder within ten days.

Table 1. Patient's coagulation values at diagnosis

Test	Value	Unit	Range
PLT	384.000	/ml	140-390
Fibrinogen	911	mg/dl	200-400
aPTT	1,71	ratio	0.8-1.2
PT/INR	1.18	ratio	0.85-1.25
Factor IX	137	%	70-130
Factor VIII	22	%	70-130
Factor VIII inhibitor	1	UI/ml	
vW:Ag	188	%	60-40

Discussion

Acquired inhibitors against coagulation factor VIII is a rare condition (about 1-4 per million/year) and it results in severe life-threatening spontaneous or post-traumatic bleeding (about 90% of cases). The antibodies neutralize procoagulant function and arise in individuals with no prior history of clinical bleeding. About half of the cases are associated with postpartum period, autoimmune diseases, malignancy, infections or medications. Clinical manifestation includes spontaneous bleeding into the skin, muscles or soft tissues or excessive bleeding during surgery. Hemarthrosis which is the hallmark of congenital severe haemophilia A seldom occurs. The diagnosis of acquired haemophilia A is based on the prolongation of aPTT (which does not normalize after the addition of normal plasma), reduced FVIII levels and

evidence of FVIII inhibitor (expressed in Bethesda Unit = BU). The treatment of acute bleeding episodes and the long-term eradication of the autoantibodies consist, despite of immediate transfusion therapy, in using rFVIIa (90 mcg/kg every 2-6 hours) or activated prothrombin complex concentrate (FEIBA 50-100 IU/ kg every 8-12 hours) in patients with higher inhibitor titer (> 5 BU); or raising the level of FVIII by administration of desmopressin (DDAVP 0.3 mcg/kg) or concentrates of FVIII (40 IU/kg plus 20 IU/kg for each BU of inhibitor) in patients with low level of inhibitors (< 5 BU). Long-term management is necessary for eradication of inhibitors by immunosuppression (prednisone 1 mg/kg 3 weeks alone or in combination with cyclophosphamide 2 mg/kg). Other treatments such as intravenous immunoglobulin (HD IgG 2 g/kg for 2 or 5 days), physical removal of antibodies (plasmapheresis or immunoadsorption), or anti-CD20 monoclonal antibody Rituximab has shown to be effective in acquired haemophilia.

Conclusions

Despite its low incidence rate, acquired haemophilia can be suspected in cases of spontaneous or excessive unexplained bleeding in presence of alterated coagulation laboratory tests (PT, aPTT, INR). Combination of clinical presentation and knowledge of coagulation cascade can bring to a correct differential diagnosis before referring to Haematology Unit for definitive diagnosis (table 2).

Table 2. Simplifyed differential diagnosis of haemostasis disorder

PLT	Fibr	aPTT	PT/INR	D-dim	ATIII	Possible diagnosis
↓	=	=	=	=	=	Platelet deficiency
=	=	↑	=	=	=	Haemophilia A-B Von Willebrand's disease Factor XI deficiency
=	=	=	↑	=	=	Vit K deficiency, dicumarolic therapy
=	=	↑	↑	=	=	Protrombin deficiency, Heparin therapy Factor V, VII, X deficiency, LAC
=	=	=	=	=	=	Factor XIII deficiency
↓	↓	↑	↑	↑	↓	Disseminated intravascular coagulation

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Ambulatorio di follow-up del Pronto Soccorso. Analisi di una esperienza e degli effetti sull'attività.

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Il progressivo incremento del volume di attività dei servizi di Pronto Soccorso (PS), l'aumento della complessità dei pazienti (pz) e la diminuzione dei posti letto costituiscono le principali criticità dell'attività nei Dipartimenti di Emergenza. Ne consegue il sovraffollamento delle strutture, che rischiano di non poter assolvere adeguatamente i compiti istituzionali, con riduzione della qualità delle cure, aumento del rischio clinico e notevole ripercussione negativa sul personale sanitario. Per fronteggiare la situazione di crescente difficoltà, nel Dipartimento di Emergenza dell'A.O. S.Croce e Carle di Cuneo, in accordo con la Direzione Sanitaria, si sono adottate molteplici soluzioni organizzative, di seguito indicate:

- aumento del numero dei Medici e degli Infermieri in servizio in PS nelle ore di maggior afflusso dei pazienti;
- potenziamento dell'attività di osservazione breve (OBI);
- realizzazione di un sistema preordinato che prevede l'attribuzione giornaliera di posti letto dedicati al PS da parte dei Reparti di area medica;
- attivazione dell'ambulatorio di follow-up.

L'ambulatorio di follow-up ha assunto particolare rilevanza nell'ottica di favorire dimissioni protette e continuità delle cure per le persone dimesse dal PS, dall'OBI e dalla Medicina d'Urgenza.

Obiettivi perseguiti

- Effettuare una rivalutazione clinico-diagnostica a breve termine di pazienti con patologia a media complessità e bassa evolutività (es. febbre in pz immunocompetenti, polmonite classe PORT I-III; scompenso cardiaco moderato,
- FA non databile, TVP), evitando "ritorni programmati" in PS.
- Valutare l'esito di interventi/terapie praticati in PS (es. ferite complesse, drenaggio di ascessi).
- Migliorare la sicurezza della dimissione.
- Migliorare l'appropriatezza dei ricoveri.

Organizzazione

L'attività ambulatoriale è iniziata nel mese di aprile 2010, si svolge in locali dedicati attigui all'area di PS ed è prevista dal lunedì al venerdì, per due ore al giorno.
L'accesso alla visita avviene tramite un sistema di prenotazione semplificato, attivo 24 ore, sette giorni su sette, su indicazione esclusiva del Medico d'Urgenza che dimette il paziente.
Le visite vengono effettuate da un Medico d'Urgenza a rotazione, coadiuvato da un Infermiere dedicato alle attività connesse al PS (ambulatorio dei codici a bassa priorità).
Sono previste anche prestazioni assistenziali e diagnostiche, quali medicazioni, ECG, prelievo per indagini di laboratorio (con referto entro un'ora dall'esecuzione).
Tutta l'attività viene gestita in regime ambulatoriale con percorsi facilitati e rapidi, ma soggetta alle normative vigenti per quanto concerne il pagamento del ticket.

Attività anno 2010/2011

Nel 2010 sono stati prenotati 373 pz, di cui 336 hanno regolarmente effettuato la visita, mentre nel 2011 sono stati prenotati (dati aggiornati a settembre 2011) 486 pz di cui 434 effettivamente valutati (90%).
I pazienti ricoverati prima di effettuare la visita programmata sono stati 14/373 (3,7%) nel 2010 e 14/486 (2,8%) nel 2011; di questi 28 ricoveri nei due anni, 17 (60%) si sono verificati entro 3 giorni dalla dimissione del PS.
Un solo paziente (< 0,5%), affetto da cardiopatia ipocinetica avanzata, giunto in PS per scompenso cardiaco, è deceduto improvvisamente prima della visita programmata. Nell'anno 2011, altri 18 pazienti sono stati ricoverati dopo la visita di controllo (4% del totale), di cui 4 entro 3 gg dalla visita.
Dopo circa sei mesi dall'attivazione dell'ambulatorio di follow-up, è stata eseguita un'indagine somministrando un questionario anonimo ai medici coinvolti, relativo all'attività di PS e Med. Urg. Tutti i medici hanno compilato il questionario.
Per quanto riguarda gli items relativi all'ambulatorio di follow-up, il 90% dei medici interpellati ha ritenuto che tale attività abbia incrementato la sicurezza della dimissione dei pz e l'85% ha dichiarato che l'invio in ambulatorio aveva consentito anche la riduzione di alcuni ricoveri; in questi casi il 50% degli intervistati ha affermato che tale diminuzione si poteva indicare con una percentuale percepita come significativa (> 25%).

Conclusioni

Dai dati in nostro possesso risulta che solo il 6% dei pazienti inviati in ambulatorio è stato ricoverato, prima o dopo la visita, e si è registrato un solo decesso, mentre la compliance dei pazienti è stata estremamente elevata, con valori > 90%, dimostrando il favorevole impatto dell'iniziativa su di essi. Inoltre, l'attivazione dell'ambulatorio di follow-up è stata positivamente accolta dai Medici d'Urgenza, che lo ritengono uno strumento utile per la dimissione in sicurezza dei pz, in quanto garantisce un'adeguata gestione clinica a breve termine, che potrebbe anche ridurre il numero dei ricoveri.

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Incidence, clinical features and management of acute allergic reactions: the experience of a single, Italian Emergency Department

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Objective

Few data on the incidence, aetiology, clinical features and management of patients with acute allergic reactions presenting to the Emergency Department are currently available. The aim of the study was to report the annual experience of a single Italian adult Emergency Department about anaphylaxis.

Methods

This is a retrospective, case-based study of adult patients attending the Emergency Department in Alessandria, Italy, during the years 2009-2010. We evaluated the medical records of patients satisfying diagnostic codes involving acute allergic reactions. Incidence, demographic data, causative agents, clinical features, management and outcome were reported.

Results

In all, 390 patients with acute allergic reactions were evaluated during the year, corresponding to 0.7% of all Emergency Department visits. Causative agents were recognized in 55.1% of patients and more commonly included drugs (26.9%), insects (14.8%) and foods (8.9%). Cutaneous features were the single most common clinical presentation although two or more clinical features were frequently reported (17.7%). Anaphylaxis was diagnosed in 4.6% of patients. After therapy and a period of monitoring, 92.8% of patients were discharged directly from the Emergency Room, 7.0% were admitted and one patient died, corresponding to a fatality rate of 0.2%.

Conclusions

Acute allergic reactions are common diseases referring to our Emergency Department. In the half of cases, a precipitant agent was identified and cutaneous and/or mucosal changes were often the first feature. Most patients were definitely treated and discharged but about 7.0% of patients required hospitalisation. Observation Unit and Intermediate Care Unit were essential for clinical management of these patients.

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Mild head injury in old patients: is the age an independent risk factor in low risk patients?

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Introduction

Mild head injury (MHI) in adults is a common clinical problem in emergency department (ED) worldwide, but its management is not homogeneous. Several guidelines had been produced in order to focus on the need of CT scans for higher risk patients (see Figure 1). A long-standing debate is still going on about MHI in the elderly. Some authors consider patient age (> 60 or 65 years) an independent risk factor, however the agreement on this issue is not complete. According to Italian guidelines (IG, 2006), in patients older than 65 years with low risk MHI a CT scan of the head and a short time of observation are recommended, but the high number of scans negative for intracranial complications suggested to perform a retrospective study.

MINOR HEAD INJURY (LOW RISK)

Patients with a Glasgow Coma Scale (GCS) score of 14–15

We considered eligible patients without:

- loss of consciousness
- amnesia
- vomiting
- diffuse headache
- history of seizures
- assumption of oral anticoagulant or coagulopathy
- history of neurosurgical procedures or brain disease (i.e. focal deficit)
- signs of skull fractures
- drug or alchol abuse
- altered mental status

and if the dynamic of trauma is clear and not dangerous (car accident, pedestrian vs vehicle collision, fall from several meters, deep wounds, i.e.)

Figure 1. Clinical characteristics of minor head injury.

Matherials and methods

We performed a retrospective study retrieving patients over 65 years old evaluated in our ED in which a CT scan of the head was performed for low risk MHI, between April 2004 and April 2010. We analyzed their CT scans of the head, and in case of pathological finding related to trauma, we documented further follow up.

Results

Between April 2004 and April 2010, 2149 patients over 65 years were evaluated in our ED for low risk MHI: the mean age was 81 years, 985 patients were male and 1164 were female. We documented 47 intracranial acute complications on CT scan (2.18%) (Figure 2), but only 3 patients (0.14%) underwent surgical procedures. We analyzed our patients according to different age groups (Figure 3): in 916 patients aged between 65 and 79 we documented 6 cases of positive findings on CT scan (< 1%) and in 1233 patients older than 80 years we documented an increased rate of acute intracranial complications (> 3%). 617 patients were in antiplatelet therapy: 22 of these patients (3.72%) had pathological acute findings on CT scan (Odds Ratio 2.23).

Discussion

According to some authors, the age over 60-65 years is considered an indipendent risk factor for predicting a positive TC scan in patients with MHI. Their assertion is obviously true, but the issue is the different criteria to define a MHI. In

some studies, researchers include in MHI patients with a history of loss of consciousness, amnesia and other risk factors, which are actually considered a striking recommendations for a TC scan. In our study, old patients with those risk factors were excluded and the following retrospective analyses on eligible patients showed that the percentage of intracranial complications was similar to that observed in younger patients.

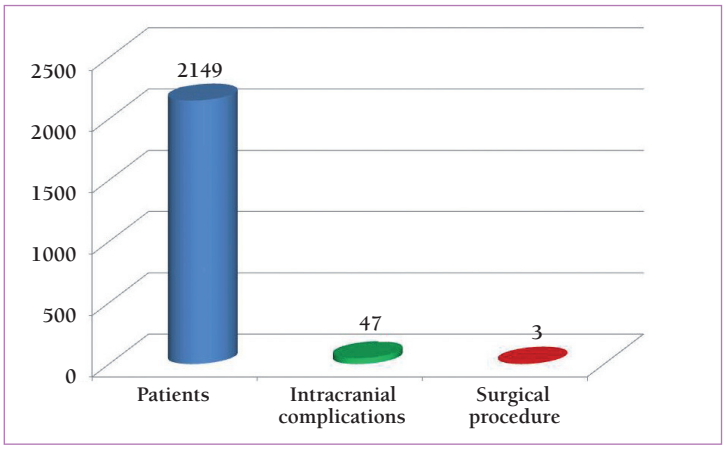

Figure 2. MHI in elderdy (>65 years) from april 2004 and april 2010.

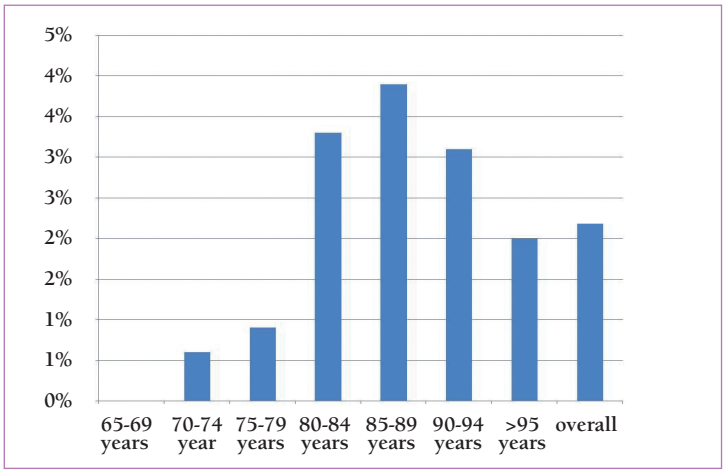

Figure 3. Intracranial acute complications - age distribution.

Therefore we can claim that selecting accurately the lack of risk factors, physicians could avoid to submit to TC scan a large number of old patients, at least until 80. Our results are intriguing because of the possibility of markedly reduce costs and the length of stay of many old patients in the ED. In very old patients and in the group receiving antiplatelet therapy, neuroimaging is recommended because of the increased incidence of intracranial complications.

Ultrasound caval index as bedside predictor of dehydration

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Introduction

Dehydration is a clinical problem frequently observed in emergency departments (ED), but it's a difficult clinical diagnosis because of the lack of specific signs. No single laboratory value has been found to be completely accurate in predicting the degree of dehydration, however the concentration of blood urea nitrogen (BUN) and the ratio of BUN to serum creatinine (B/Cr) appear to be among the most sensitive parameters. An invasive approach as the measurement of the central venous pressure is a useful method to evaluate the intravascular volume status and expecially to monitor intravenous fluid therapy; recently, the ultrasonographic measurement of the inspiratory collapsibility of the inferior vena cava (Caval Index, CI, see Figure 1) has been reported as a useful non-invasive data which correlates to the central venous pressure. CI could also be a non-invasive marker of low volume status for the emergency physician, thereby aiding the clinician in fluid management. The present study is performed with the aim to explore the relationship between CI and B/Cr ratio in patients observed for the first time in an emergency room.

Materials and methods

This prospective, observational study was conducted at our ED, between November 2010 and January 2011. CI was measured by two experienced emergency physicians in all patients evaluated during that period for medical or traumatic causes, when the clinical picture indicated need of blood analysis. During the data collection phase, physicians performing the measurements were blinded to blood sample results. Patients were ineligible if an ultrasonographic measurement of the inferior vena cava could not be performed because of technical limitations, if the patients were intubated, or in case of enlargement of the right cardiac cavity (as in case of right cardiac failure, either acute or chronic).

Results

During the observational period, 112 patients were considered eligible (59 female, 53 male, with a mean age of 63 years), with a mean CI of 55.38% and mean B/Cr of 18.16. Our preliminary data suggest a good correlation between CI and B/Cr (Pearson Index 0,76, $p < 0.001$, Figure 2), however we are waiting for a further statistical analysis.

Discussion

The close relationship between CI and the central venous pressure has been proven by recent studies. This observation allows to use ultrasonography for aggressive fluid replacement in dehydrated patients, sometimes avoiding invasive hemodynamic monitoring. Our study appears to support this statement because the measurement of CI seems to directly correlate to B/Cr, which is considered an important marker of dehydration. Then bedside sonography can give the emergency physician immediate information on patients' volume status long before obtaining laboratory findings. This can be a useful support in diagnosis and therapy especially in our time-dependent patients' evaluations.

Utilizzo di una scala comportamentale ALGOPLUS in soggetti inabili acomunicare verbalmente in un dipartimento di emergenza

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Introduzione ed obiettivi del lavoro

Il dolore è il disturbo più comune nelle persone che si presentano in un Dipartimento d'Emergenza con una prevalenza del 61% e l'oligoanalgesia è un fenomeno universalmente riconosciuto. Tuttavia, pazienti anziani con età maggiore di 65 anni che giungono in DEA inabili a comunicare rappresentano fino al 25 % del totale degli accessi (Hustey FM, Meldon SW. *The prevalence and documentation of impaired mental status in elderly emergency department patients*. Ann Emerg Med 2002; 39: 248-253). Trattare il dolore in questa categoria di pazienti può rappresentare una sfida per il personale sanitario medico ed infermieristico.

Lo scopo del nostro lavoro è stato quello di valutare se l'utilizzo della scala comportamentale ALGOPLUS in soggetti inabili a comunicare verbalmente l'intensità del dolore incida su una migliore gestione dell'analgesia in DEA.

Materiali e metodi

Pazienti con dolore acuto inabili a comunicare verbalmente sono stati sono stati randomizzati a ricevere la valutazione del dolore con la scala ALGOPLUS. La scala comprende la valutazione: *dell'espressione facciale* (arriccia le sopracciglia, smorfie, mascella serrata, sguardo fisso);
dello sguardo (sguardo fisso, distante; supplicante; pianto; occhi fissi);
del pianto (espressioni di dolore; gemiti; urla; ho male);
del corpo (protezione di una parte del corpo; rifiuto di mobilizzazione; immobilità);
del comportamento (cambiamento comportamentale, agitazione, aggressività).
Un punteggio maggiore o uguale a due è stato ritenuto il valore soglia per discriminare la presenza di dolore in soggetti inabili a comunicare con una sensibilità del 87% e una specificità dell'80% (Rat P et al. *Validation of an acute pain-behavior scale for older persons with inability to communicate verbally: Algoplus*. Eur J Pain 2010, doi:10.1016/j.ejpain.2010.06.012).
I pazienti sono stati arruolati secondo il metodo *convenience sample*, subordinatamente alla presenza dello sperimentatore nel luogo della raccolta dati e in giorni random per ridurre al minimo i bias di selezione. L'*end point* primario è stato definito come riduzione statisticamente significativa del punteggio ALGOPLUS in sede di dimissione confrontato con la valutazione iniziale. L'*end point* secondario è stato definito come somministrazione di farmaci analgesici, in particolare di oppiacei ed il tempo di somministrazione dei farmaci. È stata inoltre valutata la prescrizione di farmaci in sede di dimissione.

Risultati

Tra i 103 pazienti considerati eleggibili da novembre 2010 a giugno 2011, 17 non hanno partecipato e sono stati esclusi. I rimanenti 86 pazienti sono stati randomizzati a ricevere valutazione del dolore con la scala ALGOPLUS (N = 43) o trattamento convenzionale (N = 43). Le caratteristiche di base dei due gruppi erano sovrapponibili per età, sesso, scolarità, stato coniugale e sede di provenienza. Degli 86 pazienti inabili a comunicare 19 (22 %) erano affetti da delirium e 67 (78 %) avevano un alterato stato cognitivo.
La differenza tra il livello di dolore medio tra ingresso in DEA e dimissione era significativa sia nel gruppo ALGOPLUS (T0 2,97 ± 0,8 vs Tend 1,72 ± 0,9) (p = 0,0000) che nel gruppo di controllo (T0 2,79 ± 0,5 vs Tend 2,30 ± 0,8) (p = 0,001). Quando i pazienti venivano seguiti con la scala osservazionale ALGOPLUS, il 48,8% (21/43 pazienti) riceveva analgesia, ma solo l'11,6% (5/43 pazienti) riceva oppiacei.
Nei soggetti seguiti con il metodo tradizionale solo il 23,2% (10/43 soggetti riceveva analgesia e a solo il 9,3% (4/43) veniva somministrata una terapia con oppiacei. I soggetti seguiti con la scala ALGOPLUS, pertanto, avevano una probabilità maggiore di ricevere un analgesico rispetto al gruppo di controllo [3,15 (95% CI 1,2-7,9)].

Discussione e conclusioni

L'utilizzo della scala comportamentale ALGOPLUS ha un impatto significativo in termini quantitativi e di tempistica nel trattamento analgesico delle persone afferenti in DEA inabili a comunicare. Si ritiene che la sua introduzione nella pratica quotidiana possa significativamente contribuire ad una migliore gestione del dolore.
Tuttavia, è possibile che la conoscenza diretta ed esplicita del punteggio ALGOPLUS da parte del personale sanitario abbia influenzato un loro più adeguato trattamento del dolore indipendentemente dalla scala ALGOPLUS in sé, in considerazione della significativa riduzione finale del punteggio ALGOPLUS in entrambi i gruppi di trattamento.
Parole chiave individuate: Pain, Emergency Department, oligoanalgesia, Pain Assessment, ALGOPLUS Scale.

Oligoanalgesia in the Emergency Department: recognizing the need of new clinical strategies for acute pain management

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Introduction

Acute pain is the most common presenting symptom in the Emergency Department (ED); nevertheless, in this setting, oligoanalgesia is known to be a very frequent problem.

Objective: to recognize the presence of oligoanalgesia in our ED. This is the background to develop new strategies for acute pain management.
Design: retrospective study. Setting: ED of a community-based, 700-bed hospital.

Patients and methods

Retrospective analysis of the first 3000 ED visits in 2011 (software AIRO, Area Informativa Ricoveri Ospedalieri), with regard to the following indicators: A) assessment of pain intensity at triage using pain scales; B) number of patients with moderate/severe pain who received analgesics; C) analgesic drugs used in the ED; D) average door-to-drug time in patients with moderate/severe pain; E) number of patients with severe pain with door-to-drug time > 20 min.; F) number of patients with moderate pain with door-to-drug time > 60 min.; G) number of patients who received a reassessment of pain; H) number of patients who received a home prescription of analgesic drugs at discharge.
Patients with age < 12 years, chest or abdominal pain, severe headache (yellow code) and major trauma were excluded. We identified 606/3000 patients (20.2%) with potentially treatable pain (68/606 yellow code 11.3%, 538/606 green code 88.7%). In patients with severe pain, diagnoses were the following: minor trauma 56 (82.5%); renal colic 9 (13.3%); biliary colic 1 (1.4%); low back pain 1 (1.4%); other kind of pain 1 (1.4%). In patients with moderate pain, diagnoses were the following: minor trauma 410 (76.3%); renal colic 16 (2.9%); biliary colic 11 (2.1%); low back pain 23 (4.2%); headache 26 (4.9%); other kind of pain 52 (9.6%).

Results

A) All the patients received an assessment of pain intensity with verbal rating scale (mild, moderate, severe pain); B) 23/68 (33.8%) patients with yellow code and 97/538 (18.9%) patients with green code received analgesics; C) the drugs used were the following (single doses): acetaminophen IV (45), ketoprofen IV (35), tramadol IV (3), diclofenac IM (35), miorelaxants IM (20), antispastics IV (20), lorazepam OS (6), betamethasone IV (3), acetylsalicylic acid IV (1), methylprednisolon IV (2), Oxygen (2); D) average door-to-drug time was 90.2 min. for yellow code (range: 7-679 min.) and 93.7 min. for green code (range: 9-908 min.); E) 39% of the patients with yellow code who received analgesics (9/23) had a door-to-drug time > 20 min.; F) 50.5% of the patients with green code who received analgesics (49/97) had a door-to-drug time > 60 min.; G) none of the patients received a reassessment of pain intensity; H) 22/37 (59.4%) patients with yellow code discharged home received a clear prescription of analgesics. 314/490 (64%) patients with green code discharged home received a clear prescription of analgesics.

Conclusions

As reported in previous studies, acute pain is undertreated also in our ED. Recognizing this problem could be the first step to develop clinical pathways for pain management in this setting.

Pediatric triage applied to "children with special need of care": a pilot study

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Background

Children with special care needs have or are at increased risk for a chronic physical, developmental, behavioral or emotional condition and they also require health and related services of a type or amount beyond the one generally required by children. Thanks to the important clinical and therapeutic innovations, today these children have an increasingly higher perspective of living, therefore, more frequently, they turn to pediatric emergency services, as all other children, in order to treat or to solve acute phenomena. Considering that these children have a pathological chronic clinical picture, this behavior causes issues of evaluation (either undervaluation or overvaluation) of the health problem that lead to an inadeguate emergency color-code assignement during the triage phase.
The purpose of this study is to determine if triage cards, specifically designed for children with special care needs (containing information about the syndrome, the comorbidities most frequently found, the main complications and major causes of death) may increase the accuracy of the color code assignment, ensuring specificity and sensitivity of the procedure as well as giving a higher confidence to the *triage nurse* in charge of children with special care needs.

Methods

In order to prove our theory, we conducted a prospective research project involving a triage nurse population that, through a pre-post tests methodology, had to apply the pediatric triage procedure on different simulated clinical cases related to rare syndroms (Fanconi, Cornelia de Lange, Williams, Noonan, 22q11.2 Microdeletion, Down, Mowat-Wilson, Tuberous Sclerosis, Noonan, Wolf-Hirshhorn). The collected data were processed using nonparametric tests (Fisher's exact test MxN) and the subjectivity of triage nurse regarding the application of the procedure have been developed through self-evaluation Likert 5-item forms.

Results

The analysis of the data shows that in 5 cases syndromes and triage cards are highly correlated ($p < 0.0001$) and in 2 cases they are quite related ($p = 0.0281$). The cases without statistical significance, however, show greater sensitivity to award the code linked to the correct identification of health problems and linked to a determination of overestimation of the color code.

Discussion

Despite the correlation between the specific triage cards is not present for all syndromes considered, it is desirable that all hospitals that accept children boards should adopt to improve the performance of triage nurses especially for the syndromes commonly treated into hospital organizations.

Ottimizzazione della profilassi antitetanica nei pazienti con ferita in Pronto Soccorso mediante l'utilizzo del Tetanos Quick Stick® (TQS)

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Il tetano è una grave malattia prevenibile con presidi profilattici (vaccino ed immunoglobuline, IG), non sempre somministrati in maniera corretta (spesso per l'anamnesi non puntuale o difficoltosa). È disponibile una metodica, il Tetanos Quick Stick® (TQS), che permette di conoscere in 10 minuti (sensibilità 80% e specificità 100% circa) lo stato di immunizzazione di un soggetto nei confronti del tetano. L'integrazione del TQS con le linee guida vigenti potrebbe migliorare l'appropriatezza nella profilassi antitetanica non programmata, con ricadute anche in termini di cost-effectiveness.

Disegno studio

È stato sviluppato ed applicato c/o il DEA dell'A.S.O. S.Croce e Carle di Cuneo un protocollo per la gestione delle ferite traumatiche che contempla l'uso del TQS nei casi di ferite a rischio tetanico (almeno uno tra: occorsa oltre le 6 ore; contaminazione terra, ecc.; morso/graffio di animale; ustione; ferita cronica, "da giardinaggio" o da punta; margini laceri, necrotici o contusi; presenza di corpi estranei/pulizia difficile; denervata/ischemica; segni di infezione). In caso di negatività del TQS si attua la profilassi a seconda dello stato vaccinale del paziente, mentre in caso di positività viene omessa la somministrazione di IG.
Scopo: valutare affidabilità e ricadute in termini di cost-effectiveness derivanti dall'applicazione dell'algoritmo. End-point secondario è la valutazione epidemiologica della popolazione afferente al DEA in termini di prevalenza della immunizzazione verso il tetano.

Risultati

Nello studio dal gennaio al giugno 2011 sono stati coinvolti 290 pazienti di età > 18 anni (62.7%), 31.3% risultava di età > 65 anni. Solamente 13 pazienti (4.4%) erano in possesso del certificato di vaccinazione; per 184 pazienti (63.4%) lo stato vaccinale risultava "non noto" o "incompleto", 76 (26.2%) riferivano l'ultimo richiamo ad oltre 10 anni, 21 (7.2%)

lo riferivano tra i 5 e 10 anni e 6 (2%) da meno di 5 anni. Il TQS è risultato positivo in 179 casi (61.7% del campione, IC 95% 56-67%); di questi 114 rientravano nello stato vaccinale "non noto/incompleto". Il TQS è risultato negativo nel 54.9% (IC 95% 49-60%) dei pazienti di età > 65 anni e nel 30,6% (IC 95% 25-35%) di quelli di età < 65 anni. Le ferite a rischio sono state in totale 240 (82.7%), di cui 168 meritevoli, secondo il dato anamnestico, di vaccino + IG; il TQS è risultato positivo in 94 pazienti (55.9% IC 95% 48-63%), in cui si è evitata la somministrazione di IG. Dei 27 pazienti con anamnesi positiva per una corretta immunizzazione vaccinale il TQS è risultato negativo in 2 casi. Il costo stimato in base al protocollo Ministeriale sarebbe stato circa 2540 €, quello effettivo (TQS + vaccino + IG) è stato circa 3155 € mentre ricorrendo all'utilizzo del TQS in pazienti selezionati (età inferiore a 65 anni, senza certificato di vaccinazione) tale costo scenderebbe a circa 2945 €, garantendo comunque una elevata appropriatezza della somministrazione di IG.

Conclusioni

A fronte di un modesto aumento dei costi l'utilizzo del TQS consente un netto incremento dell'appropriatezza nella gestione della profilassi antitetanica rispetto alle attuali indicazioni ministeriali basate unicamente sul dato anamnestico.

Sviluppo di un protocollo sulla profilassi antitetanica delle ferite traumatiche in Pronto Soccorso

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Il tetano è una malattia causata da una tossina prodotta dal *Clostridium tetani*, gravata da elevata mortalità (39%), per la quale esistono validi presidi profilattici (vaccino ed immunoglobuline, IG) che tuttavia non sempre vengono somministrati in maniera corretta. Al fine di valutare lo stato di immunizzazione di un paziente nei confronti del tetano (e quindi l'eventuale necessità di somministrazione di presidi specifici) si ricorre alla raccolta anamnestica, che pur rappresentando il fulcro dell'albero decisionale sulla profilassi antitetanica non sempre è puntuale o di facile esecuzione (basti pensare agli anziani o agli stranieri immigrati nel nostro Paese). È disponibile il Tetanos Quick Stick® (TQS), un test immunocromatografico per la determinazione rapida degli anticorpi anti-tetano in campioni di siero, plasma o sangue intero umano, che permette di conoscere in 10 minuti con un prelievo di sangue capillare lo stato di immunizzazione di un soggetto nei confronti del tetano. Dalla letteratura è emerso che l'applicazione del TQS è sia affidabile (sensibilità 80% e specificità 100% circa) che valida dal punto del rapporto costo-efficacia.
Obiettivo: il TQS potrebbe venire utilizzato dei pazienti con ferita traumatica in Pronto Soccorso come integrazione della raccolta anamnestica al fine di ottenere un'ottimizzazione della profilassi antitetanica in tali pazienti (presidio "giusto" al paziente "giusto"). È stato quindi sviluppato un algoritmo per la gestione di questi pazienti che contempla l'utilizzo del TQS®. Tale algoritmo prevede:

- Determinazione dello stato vaccinale (non noto; ultimo richiamo da meno di 5 anni, tra 5 e 10 anni o oltre 10 anni, ciclo vaccinale primario incompleto).
- Identificazione tra i pazienti di coloro i quali presentano una ferita con caratteristiche a rischio di tetano (presenza di almeno una delle seguenti condizioni): non recente, occorsa oltre le 6 ore; contaminazione terra, feci ecc.; morso/graffio di animale; ustione; ferita cronica; ferita "da giardinaggio"; ferita da punta; margini laceri, necrotici o contusi; presenza di corpi estranei/pulizia difficile; denervata/ischemica; segni di infezione.
- Nei casi di ferita a rischio, oltre alle normali manovre dettate dal tipo di ferita, eventuale determinazione dell'immunità nei confronti del tetano mediante esecuzione di TQS.
- In caso di ferita a rischio e negatività del TQS si attuano le normali manovre profilattiche (vaccino ed IG), mentre in caso di positività viene omessa la somministrazione delle IG, procedendo ad eventuale somministrazione di vaccino antitetanico a seconda dello stato vaccinale del paziente.

Il risultato atteso dall'applicazione di tale protocollo è quello di una razionalizzazione delle risorse con una maggior appropriatezza dell'utilizzo delle IG (diminuzione del numero totale di IG praticate e conseguente riduzione dei costi e del rischio di esposizione a potenziali malattie infettive o reazioni allergiche in pazienti non a rischio).

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Heterogeneous management of tetanus risk in traumatic wounds among different hospitals

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Abstract

Unscheduled tetanus prophylaxis (UTP) used in the emergency room (ER) in patients with wounds is erroneous in 40% of cases.
Recent studies have shown that the management of tetanus infection risk is heterogeneous. Only 54% of the physicians recorded for each patient informations about the characteristics of the wound and the tetanus immunization history and only 1.5% of the physicians correctly adhere to guidelines on tetanus prophylaxis and immunization practices in traumatic wound management.
This study evaluated the heterogenity in use of tetanus vaccines and antitetanus serum in Emergency Departments (EDs) of three non-academic acute care public hospitals of an Italian North-East public health agency named ULSS 10 Veneto Orientale.

1 Methods: in order to measure the heterogeneity of tetanus risk in traumatic wounds we compared the consumption of serum and vaccine in each ED, related to the total number of accesses to every ED in 2010. Also the different ratios between serum and vaccines consumption have been evaluated.
2 Results: the consumption and also the serum to vaccines doses ratios were highly heterogeneous.
3 Conclusions: Our results show that management of tetanus risk in traumatic wounds is highly heterogeneous from one hospital to another, although being part of the same health agency.

Our data so confirm similar data found in literature and the need of widely accepted protocols for management of UTP in ED.

Health and safety in emergency workers

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The health and safety principles that inspire the European directives are born about 70 years ago in the Scandinavian countries. Full employment and high levels of civilization of these countries have allowed the development of democratic relationships between employers and employees. In Mediterranean countries, on the contrary, the high level of unemployment has led to unbalanced relationships and have inspired an authoritarian model.
The authoritarian approach produces poor implementation of rules and the lack of verification of the effectiveness of the process. Employees' participation is often deemed unnecessary and the attitude of workers becomes "negotiation". The occupational hazard is not prevented, but monetized. Examples of this approach are: the recognition of the "cause of service", according to a law in force in Italy since 1895, and the "job burnout" that assumes "occupational factors that can not be prevented". These institutions are the opposite of prevention.
Another example of an authoritarian, not European setting of Italian laws, is the way in which the work-related stress is addressed. While the incorrect compilation of Risk Assessment Document is criminalized, no national or regional action to reduce stress in the workplace has been planned.
The most widely used method to assess stress, proposed by ISPESL/INAIL, is an algorithm that allows to evaluate the emergency department of a hospital as a "stress free" workplace.
In fact, the literature indicates that work in emergency and first aid is objectively stressful, because it adds to all the traditional stressors (such as workloads) and those typical of healthcare (the confrontation with death) also the need to instantly switch from a resting to an alert state, when the patient needs it.
Job stress may also create a vicious circle. Indeed, stress increases the frequency of medical errors. Errors may cause litigation, and the lawsuit against the doctor is a powerful stress factor ("Malpractice stress").
The emergency workers are particularly exposed to biological risk, and musculoskeletal disorders. Even exposure to chemical hazards and radiation can sometimes be done in emergency conditions that restrict safety.
The emergency workers are exposed to physical violence by patients and their friends or relatives. In an Italian health unit, between 2005 and 2011, emergency personnel has a relative risk of physical aggression equal to 8.8 (95% CI = 3.8-20.5) compared to those who operate in the services.

The consequences of violence are significant and persistent and may adversely affect the professional skills and care provided.
In conclusion, we may state that emergency and first aid workers are exposed to many specific and relevant occupational risks. Each hospital has a moral and legal duty to provide sustainable and verifiable health plans aimed at the prevention of such risks.

Apparently pain-free aortic dissection in patients with neurological symptoms

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Abstract

Aortic dissection (Ad) has to be considered in patients with acute thoracic or abdominal pain and accompanying cardiovascular symptoms. However neurological symptoms at onset of aortic dissection are frequent (17-40% of the patients) and may mask the underlying condition, especially in pain-free dissection (5-15%) with predominant neurological symptoms. Therefore diagnosis of Ad can be difficult and delayed diagnosis can be fatal. Emergency physicians should be aware of apparently pain free dissection.
We report two cases of patients who presented to our Emergency Department with shock and altered consciousness. In both cases the patients did not complain of abdominal or back pain and there was no difference between peripheral pulses, but after a thorough and fast examination in both cases we found some clues that helped us to find the correct diagnosis.

Introduction

Neurological symptoms at onset of aortic dissection (Table 1, 2 and 3) are not only frequent, but often dramatic and may mask the underlying condition. Especially in pain-free dissections with predominant neurological symptoms diagnosis of aortic dissection can be difficult and delayed. Chest pain is not an obligatory symptom of aortic dissection, the frequency of pain-free dissections ranges between 5 and 15%. While Hagan *et al*. reported that most of their patients who presented with stroke also gave a history of pain, Gaul *et al*. found that only 2/3 of patients with neurological symptoms at onset of dissection complained of pain, whereas most patients without neurological symptoms (94.4%) experienced initial pain.

Extension of dissection to aortic arch vessels Reduced cerebral perfusion due to general hypotension Nerve compression by enlarging false lumen	⇨	Stroke TIA TGA-like syndrome Hypoxic encephalopathy Horner syndrome Cardiovascular syndrome Seizure, altered consciousness

Table 1. Causes of central nervous system symptoms associated with aortic dissection.

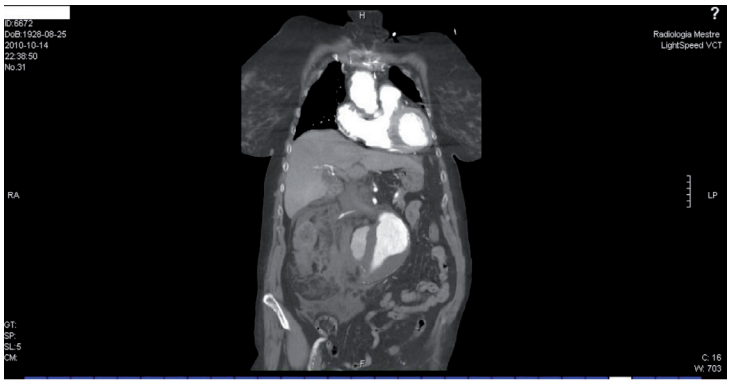
Spinal cord ischemia due to obstruction of spinal cord supplying arteries	⇨	Paraparesis anterior spinal cord syndrome, Brown-Sequard syndrome, progressive myelopathy or transient spinal cord ischemia

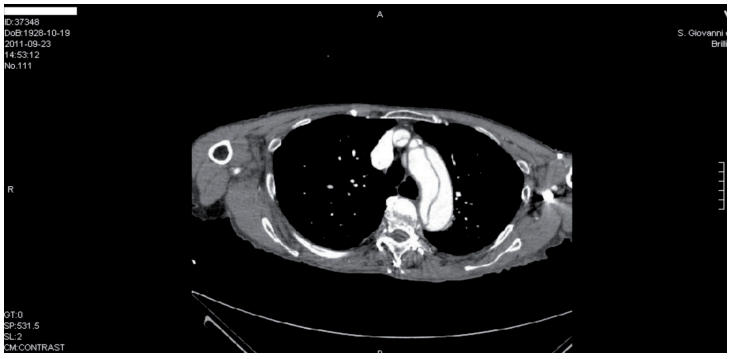
Table 2. Causes of spinal cord symptoms associated with aortic dissection.

Obstruction of vasa nervorum Compression of a nerve by the enlarging false lumen	⇨	Ischemic neuropathy (paraparesis, polyneuropathy, mononeuropathy) Ischemic plexopathy Nerve compression syndrome

Table 3. Causes of peripheral nervous symptoms associated with aortic dissection.

We report two cases of patients who presented to our Emergency Department.
Patient 1: 82 y.o., female. Vital signs: BP bilaterally 90/60, HR 74, SO2% 98%, RR 24, T 36C°. History of syncope a few hours before being conducted to the ED. Presenting symptoms: GCS 14/15 (E4,V5,M5), altered consciousness, tense abdomen, pulsatile mass, not painful. Patient unable to explain her symptoms. No other previous history available. Home medications: aspirin, diuretic, Calcium antagonist, alpha blocker. FAST: no free fluid, huge abdominal aneurysm. Blood Sugar: 93 mg/dl, D Dimer 7,25 mcg/mL FEU (normal range 0.00-0.50).
The patient was immediately sent to the reference centre for vascular surgery where she underwent an abdominal CT scan that showed a 8,5 x 9,3 cm dissected infrarenal abdominal aneurysm and retroperitoneal hematoma (see Figure 1). Immediately sent to the OR where she underwent abdominal aortic repair. Postoperative complications: kidney failure. The patient is now on dialysis, but has otherwise recovered well.





Patient 2: 83 y.o. female. Vital signs: BP bilaterally 90/50, HR 70, SO2% 95%, RR 12, T 36C°. Presenting symptoms: sudden altered consciousness, slowed speech. Signs: GCS 13/15 (E3, V5, M5), anisocoria (right > left) , deviation of the mouth (right > left). Patient unable to explain her symptoms but when she was insistently questioned she complained of back pain. FAST: no free abdominal fluid. TTE: no pericardial effusion. ABG: Lactate 2,3 . Blood Sugar: 107 mg/dl, D Dimer > 10 mcg/mL FEU. Immediate Brain CT Scan and thoracoabdominal CT scan with iv contrast that showed a dissected type I (Class I) thoracoabdominal aortic aneurysm and associated right carotid dissection (see Figure 2). Patient rapidly sent to cardiac surgery reference centre where she underwent aortic replacement surgery. Recovery uneventful.

Conclusions

Diagnosis of aortic dissection can be very difficult because it may mimic stroke. The presence of shock associated to neurological symptoms can suggest the presence of this disease.

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Circulating levels of matrix metalloproteinases 8 and 9 in patients presenting to the emergency department with suspected aortic dissection

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Background

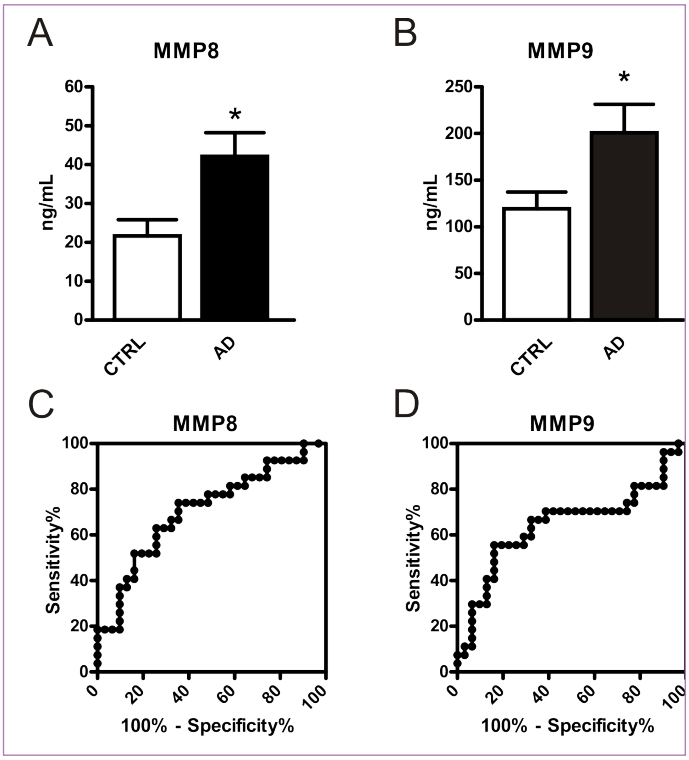
In the Emergency Department, the diagnosis of aortic dissection (AD) is challenging, as the clinical presentation of AD is heterogeneous and the available tools for rapid differential diagnosis of AD are presently limited. Circulating biomarkers of AD are thus urgently needed to improve the diagnostic approach to suspected AD. Matrix metalloproteinases (MMP) are expressed in the aortic extracellular matrix and have been implied in the pathophysiology of aortic dilation and dissection. Preliminary studies have reported that circulating levels of MMP-8 and MMP-9 are increased in patients with AD compared to normal controls (Figures A, B). However, the utility of circulating MMP-8 and MMP-9 in the diagnostic approach to suspected AD in a clinical setting is presently unknown.

Methods

Circulating levels of MMP-8 and MMP-9 were measured by enzyme-linked immunosorbent assay (Amersham) on plasma samples obtained from 58 consecutive patients presenting to the Emergency Department of the San Giovanni Battista Hospital from January to June 2011 with clinically suspected AD. D-dimer levels were also routinely assessed. All patients underwent angio-computed tomography to identify or to rule out AD. An aortic prosthesis was present in 6/27 patients with AD and in 6/31 patients without AD. AD was diagnosed in 27/58 patients (15 type A, 12 type B) and ruled out in 31/58 patients. In patients without AD, the clinical diagnosis was acute coronary syndrome (1/31), pneumonia (2/31), aortic aneurysm without signs of AD (12/31) or unspecific (16/31).

Results

Circulating levels of MMP-8 and MMP-9 presented a significant correlation ($r = 0.72$, $p < 0.0001$), while neither MMP-8 nor MMP-9 levels correlated with D-dimer levels. Plasma MMP-8 levels were 42,2 ± 6,1 ng/ml in patients with AD and 21,7 ± 4,2 ng/ml in patients without AD ($p < 0.01$). Plasma MMP-9 levels were 200,9 ± 30,4 ng/ml in patients with AD and 119,2 ± 18,2 ng/ml in patients without AD ($p < 0.05$) (Figure C). D-dimer levels were 12,3 ± 2,6 ng/ml in patients with AD and 1,9 ± 0,4 in patients without AD ($p < 0.05$). Receiver Operating Characteristic (ROC) curves were obtained for MMP-8 and MMP-9 as diagnostic markers of AD in a clinical setting representing the emergency department (Figure D).



Figures A, B. Circulating levels of MMP-8 and MMP-9 in patients without AD (CTRL) and with AD (*$p < 0.05$). **Figures C, D.** ROC curves of MMP-8 and MMP-9.

Conclusions

Circulating levels of MMP-8 and MMP-9 are significantly higher in patients presenting to the Emergency Department with AD and may help in the differential diagnosis of AD.

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STEMI e rete interospedaliera: centri Hub e centri Spoke, i tempi di trasferimento

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I pazienti con STEMI secondo gli standard attuali devono essere sottoposti a riperfusione mediante angioplastica coronarica primaria (PCI), se questa è attuabile entro 12 ore dall'insorgenza di sintomi, entro 90 minuti dalla presentazione (time-to-balloon inflation), da personale esperto (> 75 PCI/anno/operatore), in un laboratorio di emodinamica idoneo (> 200 PCI/anno di cui 36 primarie per STEMI).
Poiché buona parte delle terapie intensive coronariche (UTIC) in Italia (circa il 40% da un censimento ANMCO del 2000), non dispone di emodinamica interventistica funzionante h/24 e quindi disponibile per le urgenze, le aziende sanitarie devono trasferire i propri pazienti con STEMI nei centri che ne sono provvisti.
L'intervento focalizzerà l'attenzione sui dati dell'ospedale di San Donà di Piave, relativi ai tempi dalla chiamata al 118, o dall'arrivo del paziente in PS, alla diagnosi, fino al trasferimento interospedaliero ed alla procedura di riperfusione, relativi all'anno 2010. Dai tempi rilevati si denota un allungamento significativo dei tempi necessari alla riperfusione, sia intra-che interospedalieri, nei pazienti giunti con i propri mezzi e sottoposti al triage di bancone, rispetto a qu elli giunti con il canale del SUEM /118, e quindi in ambulanza. I tempi peggiori (2 pazienti), sono risultati correlati al numero di accessi, al numero di uscite dell'ambulanza, e al numero totale di pazienti in carico al PS nel giorno in oggetto. Da questo studio osservazionale retrospettivo effettuato nel nostro Pronto Soccorso, l'indicatore di riferimento (tempo di trasferimento per la PCI primaria in caso di STEMI), risulta a volte correlato allo stato di crowding del Pronto Soccorso.