

Public Health Case Reports

The value of protocols: the experience about a facial trauma protocol applied in the emergency room in a research and teaching hospital in the north part of Italy

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Significance for public health

The alternative use of scarce resources and the health of the population are the most urgent questions which must be faced by the public health sector. In this setting, the role of hospitals is changing very fast. In particular, the use or misuse of hospital services is becoming one of the most important topic in the public health area. Specialists in public health find it hard to work with their colleagues in hospital, but this brief report describes a successful experience involving many different MDs who managed to save scarce resources and offer better health to patients. This is an example where a worldwide clinical pathway was translated at a local level in order to be used more easily. Not only did this pathway manage to guarantee better health to patients, but also to save scarce resources, thus offering a better service to the community.

patient's health and the health services. An important aspect of these protocols is the use of questionnaires to evaluate the severity of CFT and to save patients from plain nasal radiographs and facial computer tomographies (CTs). The use of questionnaires aims at avoiding unnecessary routine X-rays and CTs whose costs are not counterbalanced with increased health for patients. The scores reached by patients at the end of these questionnaires tell physicians the most correct management and permit to detect unsuspected facial fractures.² Thus, the introduction of a protocol for managing CFTs aims at suggesting specialists to act according to the best known practice, use the best clinical evidences of the medical and surgical teams involved, reduce patient radiation exposure, casualties over time, and running costs of the emergency rooms.^{2,3}

Abstract

This short paper describes the introduction of a clinical pathway for cranio-facial trauma (CFT) in an emergency room of a big research and teaching hospital.

The case report: background information

This short case report describes the introduction of a protocol for the management of CFT in the emergency room of a research and teaching hospital located in the centre of a big city in northern Italy.

Before introducing this protocol, the initial triage of the patients with CFT used to be followed by the MDs' and surgeons' prescription of X-rays examinations and CT. Indeed, it was a habit to investigate suspected fractures with radiological tests. Nonetheless, even when using all the best medical evidences, the decision on the management of fractures was primarily based on clinical examination. Then, the patient used to start a pathway where the first X-rays examination or CT scan was likely to be followed by another one indicated by ear nose and throat (ENT) or maxillo-facial specialists called as consultants in the emergency setting.

Introduction

Emergency departments are places of concern for hospital issues, management and cost containment, especially nowadays, when resources are scarce and funding for health care provision are reduced.¹ For these reasons, medical activities need to be carefully monitored to produce the best outcomes in terms of quality of care and cost reduction.

The emergency room is not an easy area to manage as it is under pressure and overcrowded. Moreover, there one can find many MDs and surgeons of different specialties with different levels of training. Most importantly, the staff's primary duty is to look after the patients' safety. In this respect, much attention must be paid to non-essential radiological investigations for patients in emergency in order to avoid unnecessary and potentially dangerous medical tests.

A good example of clinical management is represented by one of the most frequent cases in the emergency room: cranio-facial trauma (CFT). All over the world many tools have been developed to treat it best according to the best clinical evidences, with regard to both the

In the emergency room of this hospital, 7465 CTs were performed to investigate CFT from January 1st to December 31st 2010. Eighteen percent of these patients had also a facial CT (1335 CTs). After fully investigating and after excluding major facial traumas, about 70% of CT exams of the facial bones turned out to be negative and the remaining 30% showed fractures of the nasal bones which could have been diagnosed without the use of CT. Also, the quality of the exam was suboptimal since patients were not willing to cooperate because of their clinical conditions and the emergency setting. In addition, in most cases, traumas of the facial bones were such that they could have been evaluated by ENT and maxillo-facial specialists in a postponed emergency setting by means of radiological investigations and CT. This could have

been done not in the emergency department but in a specialised one (in this case *Neuroradiology*) so as to guarantee the best technical and, as a consequence, the best clinical performance.

Design and methods

The data provided above drove us to evaluate the situation in a multidisciplinary way, and to write down a protocol shared by all the specialists who commonly intervene on the CFT in the emergency room. This had several aims: i) reduce the number of inappropriate exams; ii) perform the most appropriate exam for a specific provisional diagnosis and with the least radiation dose possible, respecting an adequate quality of the diagnostics utilised; iii) establish when the radiological exam should be performed (if necessary) by creating preferred pathways alternative to emergency radiology, thus reducing the patients' staying in the emergency room.

The working group was appointed by the Quality Unit to evaluate the best possible pathway for patients with CFT in the emergency room of the hospital. The group began to work at the beginning of 2011 and it was composed by: a quality controller, an emergency surgeon, a maxillo-facial specialist, an otolaryngologist, a neuroradiologist, an administrator of the emergency radiology department, and a chief technician of the emergency radiology department. After carefully reviewing the specific scientific references, the working group started to meet in smaller groups comprising the specialists involved in the caring pathway of this kind of patients.

A questionnaire was then prepared to investigate the clinical situation of the patients with CFT (Table 1). Its primary goal was to help emergency medical or surgical teams to make the best clinical decision for patients in need.

After compiling the questionnaire, patients were divided into three groups. The first group was composed by patients without symptoms. They were discharged with the prescription to be visited by a maxillo-

facial consultant in 24-48 h. During the referral, they would be prescribed further investigations in a more specialised radiology department of the hospital only if necessary. For this new approach, the maxillo-facial outpatients' clinics started to be open three days a week with two places devoted to patients discharged from the emergency room and with a scheduled section also on Saturday morning. The second group was made up of patients visited by an ENT or a maxillo-facial consultant called in the emergency room. These two specialists were the only ones who could prescribe X-rays and/or CT examinations to be performed in the radiological unit of the emergency department. Finally, the third group comprised patients with a major trauma. In this case the medical and surgical teams in the emergency room could act according to the protocol.

Results

From July 2011 an emergency surgeon and a maxillo-facial specialist showed and explained the protocol to all their colleagues with side-by-side and on-field education sessions during the activity in the emergency room. This new protocol was published at the beginning of May 2012. So, even if the protocol was not officially published, emergency teams of MDs and surgeons started to adopt it on a regular basis at the beginning of 2012 and the outcome was very profitable. Indeed, thanks to this new procedure, the number of CT exams decreased (Table 2). Precisely, this is more evident when considering the number of facial CTs performed in June 2010, 2011 and 2012 in the X-ray rooms of the emergency room.

From May 2012, *i.e.*, from the official publication of the protocol, three controls on CT requested for facial traumas in the emergency room were done in order to evaluate whether the professionals complied with the new ways of prescribing the exam. The controls included: re-printing the record of the emergency rooms regarding the patients who underwent a CT of the facial bones; re-printing the record of the

Table 1. Questionnaire for the patient with suspected cranio-facial trauma.

| | | | |
|-------------------------|--|----------------------|----|
| Surname and name: | | Date of birth: | |
| 1 | Do you feel any pain when opening and closing your mouth? | YES | NO |
| 2 | Is everything okay when you close your mouth firmly? | YES | NO |
| 3 | Do you see double (count your fingers)? | YES | NO |
| 4 | Can you | | |
| | - close your eyes? | | |
| | - smile? | | |
| | - blow? | YES | NO |
| 5 | Can you feel that I'm touching you on your right and on your left in the same way (touch forehead, cheeks, mandibles)? | YES | NO |
| 6 | Where does it hurt you most? | | |
| 7 | Did you have a nosebleed? | YES | NO |
| 8 | Is your nose blocked or do you lose liquid (not blood) from your nose? | YES | NO |
| 9 | Can you smell? | YES | NO |
| 10 | Evaluate the presence of | | |
| | - ecchymoses | YES | NO |
| | - canker sores | YES | NO |
| | - wounds | YES | NO |
| | - emphysema of soft tissues | YES | NO |

Signature and ID number of the doctor in charge:.....

CT; evaluating whether the neuroradiologist and the emergency surgeon adhered to the protocol; evaluating whether the CT was done in an appropriate way; addressing a further personalised education session to those MDs who had requested CT inappropriately. The first control was performed from May 11st to 13th. It revealed that 11 CTs of the facial bones were requested, though only 5 of them complied with the protocol. The second control (from May 14th to June 3rd) showed that only 3 CTs of the facial bones, out of the 33 requested, complied with

the protocol. Finally, the third control – carried out from June 4th to 30th – indicated that 38 CTs of the facial bones were requested, but that only 17 of them were protocol-compliant.

Conclusions

The adoption of the new protocol described above was very profitable and brought about an alternative approach to the management of CFT. Indeed, from September 2012 all the MDs and surgeons who prescribe CT inappropriately are asked to justify their requests for patients with CFT. In the near future this will yield many advantages: a lower X-rays exposition and a quicker turnover in the emergency room for patients; a reduction in the use of the radiological emergency department, a better team work among professionals of different specialties, and a reduction of overall costs for hospitals.

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