Reply to Letter to the Editor Concerning "HIPTCN: Prospective Observational Study of Hypocoagulated Head Trauma Patients with Normal Admission Computed Tomography Scan"

Resposta à Carta ao Editor Relativa a "HIPTCN: Estudo Prospetivo Observacional de Doentes Traumatizados Cranioencefálicos Hipocoagulados com Tomografia Computorizada Inicial Normal"

Keywords: Anticoagulants; Brain Injuries, Traumatic; Intracranial Hemorrhage, Traumatic; Neurosurgical Procedures; Tomography, Spiral Computed
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In reply:

We appreciate the insightful comments made by our colleague Dr. Mascarenhas[1] regarding our article "HIPTCN: Prospective Observational Study of Hypocoagulated Head Trauma Patients with Normal Admission Computed Tomography Scan"[2] and the opportunity to address his concerns. We would also like to thank Dr. Mascarenhas for his interest in our work and for taking the time to share his concerns.

In his letter, Dr. Mascarenhas starts by showing his apprehension regarding the surveillance complications reported. In HIPTCN we report complications in seven patients (3.9%) including agitation/confusion that started during surveillance (5), atrial fibrillation (1) and stridor with dyspnea (1). Dr. Mascarenhas states that agitation/confusion should not be considered maladaptation to the hospital environment and, hence, a complication, because these symptoms can be attributed to a post-concussion syndrome, which was not excluded. A 2014 systematic review and concussion guidelines[3] define as indicators of concussion the following: (1) observed and documented disorientation or confusion immediately after the event; (2) impaired balance within 1 day after injury; (3) lower reaction time within two days after injury; and/or (4) impaired verbal learning and memory within two days after injury. In our study, all five patients with agitation/confusion developed these symptoms hours after they were admitted to the hospital, which led to the exclusion of concussion as a diagnosis. Confusion due to maladaptation to the hospital environment is a well described complication of hospital admissions and is associated with longer hospital stays. Both the case of stridor due to nasogastric intubation and the case of atrial fibrillation due to withdrawal of beta-blockers were indeed cases of iatrogenic disease. In a multicenter observational study such as HIPTCN it is not up to the authors to judge the appropriateness of every medical decision. Iatrogenic disease is an ubiquitous problem in the hospital setting, reaching a prevalence of up to 12%.[4] The two occurrences seemed associated with the admission and had important clinical consequences. Therefore, they were accounted as complications.

Considering the results of HIPTCN we discuss some ideas to replace the current national protocols. One of them is home-surveillance in selected patients after proper education of patients and/or caregivers. Dr. Mascarenhas expresses his reluctance in discharging elderly patients from the emergency room relying solely on the information provided by the patient or caregivers. Indeed, there is no perfect way to reliably assess the quality of the information obtained in an emergency setting. The same applies to the quality of information transfer from practitioners to patients or caregivers. We share these concerns but, to our knowledge, in everyday practice, most patients or caregivers are considered reliable and are discharged home if possible. Patients, caregivers and practitioners are equally responsible for the health and well-being of the former.

This takes us to the matter on the consequences of delayed intracranial hemorrhage (DIH) in a non-hospital environment. It is true that in cases of a clinically significant DIH after discharge, these patients would have to be transported back to the hospital with the associated risks and costs. The authors agree that symptomatic DIH can be a very serious, possibly fatal complication, but, as stated by the UK National Screening Committee, when deciding to screen any disease, one needs to consider not only the severity of the disease, but also its prevalence in the studied population.[5] In HIPTCN, four out of 178 patients had a DIH (2.3%), but all were asymptomatic. In our combined cohort of 363 patients, only 1.9% had DIH, again, all asymptomatic. All these patients had a favorable outcome. Indeed, there were four patients whose Glasgow Coma Score (GCS) deteriorated during surveillance, but as stated in the article, all worsened due to a complication of surveillance. None had DIH on post-surveillance computed tomography. Hence, it seems that clinically significant DIH is a very rare outcome. As for costs, if we extrapolate the percentage of DIH in HIPTCN to a population where every patient is discharged home without surveillance, it seems unreasonable to worry about transportation costs of a residual number of patients, compared with the hospitalization costs of most of the population. This rationale is in line with a population-based approach for healthcare decision making, used for the development of healthcare protocols and guidelines. Healthcare resources are limited and, therefore, must be judiciously managed to serve the largest part of the population. Obviously, individual decision making still has its place in modern medicine, but these cases should be exceptional and never used as a single factor to guide general guidelines.

We thank Dr. Mascarenhas for bringing the case report of Itshayek *et al*[6] to our attention. In this paper from 2006, the authors describe four cases of DIH. However, it is impossible to calculate the incidence of this entity, since the total population number and the total number of years between cases were not stated. Consequently, we can only conclude that this complication exists, and we would thus not dare to disagree. Nevertheless, we need to have in mind that

this case report was published 15 years ago, and the reality back then was not the same as today. Firstly, the anticoagulants used were different. In 2006, there were no new oral anticoagulants (NOAC), a type of anticoagulant that represented almost 70% of the cases in HIPTCN. These NOACs are easier to use since they have less food and drug interactions compared to Warfarin. This leads to less warfarin overdoses and, possibly to lower hemorrhagic risk for these patients. Secondly, we should consider CT technology. Due to advances in this field the negative predictive value of a negative CT is much higher today than it was in 2006. Some other interesting aspects are worth mentioning regarding these cases. Firstly, two patients developed DIH as inpatients, and one of them was found in deep coma (GCS 3 with fixed pupils), regardless of being under surveillance, and died six days after surgery. Secondly, one of the outpatients was found unconscious at home, so we cannot exclude a second head trauma. Lastly, the mortality rate of inpatients and outpatients was equivalent (50% for both groups). By analyzing this paper, one cannot conclude that surveillance and repeat CT scan within a 6-to-24-hour time frame allows for the timely diagnosis of DIH in hypocoagulated patients, as stated by Dr. Mascarenhas.

We would like to finish by once again thanking Dr. Mascarenhas for allowing us to further elaborate on this topic. The management of these patients is still not settled, but through an open and evidence-based approach we can get closer to developing an improved protocol for these patients.

AUTHORS CONTRIBUTION

PDB: Draft of the paper.

JHR, JS: Draft and critical review of the paper.

SSL, NCF, RM, JPP, RT, CA, MJM, JB, DR, DS, NS, WT, CF, MF, LR, GF, CN, VP, FS, AF, OS: Critical review of the paper.

COMPETING INTERESTS

The authors have declared that no competing interests exist.

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