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Original article

Emergency hysterectomy for life-threatening postpartum haemorrhage: Risk factors and psychological impact

Hystérectomie d'hémostase dans l'hémorragie du post-partum sévère : facteurs de risque et impact psychologique

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ABSTRACT

Background. – Emergency postpartum hysterectomy (EPH) is usually considered the final resort for the management of postpartum hemorrhage (PPH). The aim of this observational study was to identify the risk factors for EPH, to evaluate the ability of EPH to stop bleeding and, finally, to estimate its psychological impact.
Methods. – This was a retrospective analysis of postpartum hysterectomy in all patients with PPH admitted between 2004 and 2011 to Lariboisière Hospital. We compared women for whom EPH was successful and those who required an advanced interventional procedure (AIP) to stop the bleeding despite hysterectomy. We also evaluated the severe PPH (SPPH) score in this particular setting. The psychological impact of emergency hysterectomy was also assessed.
Results. – A total of 44 hysterectomies were performed among 869 cases of PPH. Twenty were successful, while an additional AIP was required in 22 others (50%). Prothrombin time < 50% and a shorter interval between the onset of PPH and hysterectomy were independently associated with the need for an additional AIP. The area under the ROC curve of the SPPH score to predict the need for another AIP was 0.738 (95% confidence interval 0.548–0.748). Furthermore, 64% of the hysterectomized patients suffered from post-traumatic stress disorder.
Conclusion. – Failure of postpartum hysterectomy to control bleeding was frequent, and it was associated with persistence of coagulopathy. Hysterectomy in this context had important psychological impacts.

Mots clés :
Hémorragie du post-partum
Hystérectomie
Syndrome de stress post-traumatique

RÉSUMÉ

Contexte. – L'hystérectomie d'hémostase (EH) est généralement considérée comme le dernier recours pour la gestion de l'hémorragie du post-partum (HPP). Le but de cette étude observationnelle était d'identifier les facteurs de risque d'EH, d'évaluer le risque d'échec de l'EH à arrêter le saignement et, enfin, d'estimer son impact psychologique.
Méthodes. – Ce fut une analyse rétrospective de l'hystérectomie post-partum chez tous les patientes admises pour HPP entre 2004 et 2011 à l'hôpital de Lariboisière. Nous avons comparé les femmes pour qui l'EH a réussi à stopper le saignement à celles pour qui une procédure interventionnelle invasive (PII)

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supplémentaire a été nécessaire pour arrêter le saignement. Nous avons également évalué l'intérêt du score Severe Post-Partum Hemorrhage (SPPH) dans ce contexte particulier. L'impact psychologique de l'hystérectomie d'hémostase a également été évalué.
Résultats. – Un total de 44 hystérectomies ont été effectuées parmi 869 cas d'HPP. Vingt-deux ont réussi, alors qu'une PII supplémentaire a été nécessaire dans 22 autres (50 %). Le temps de prothrombine < 50 % et un intervalle plus court entre le début de l'HPP et l'hystérectomie étaient indépendamment associés à la nécessité d'une PII supplémentaire. L'aire sous la courbe ROC du score SPPH pour prédire la nécessité d'une autre PII était de 0,738 (intervalle de confiance à 95 % : 0,548 à 0,748). En outre, 64 % des patients ayant subi une hystérectomie ont souffert du syndrome de stress post-traumatique.
Conclusion. – L'échec de l'hystérectomie d'hémostase pour contrôler le saignement est fréquent et semble associé à la persistance d'une coagulopathie. L'hystérectomie dans ce contexte a des répercussions psychologiques importantes.

1. Introduction

Postpartum haemorrhage (PPH) is the leading cause of maternal death in many countries [1]. Emergency postpartum hysterectomy (EPH) is often considered the final resort for the treatment of PPH. The incidence of EPH varies from 0.5 to 2.5 per 1000 deliveries [2–11]. The morbidity associated with PPH requiring postpartum hysterectomy is unknown. Recent studies [12,13] have demonstrated that a requirement for further treatment after hysterectomy, damage to other structures and ICU admission are common after EPH. However, the short- and long-term effects of EPH remain unclear.

In addition, psychological morbidity due to severe PPH has rarely been assessed [14]. Post-traumatic stress disorder (PTSD) can develop after the occurrence of one or more traumatic events, such as serious injury or the threat of death. It is diagnosed when a group of symptoms (such as disturbing recurring flashbacks, avoidance or numbing of memories of the event, and hyperarousal) continue for more than one month after the traumatic event. PTSD has been described after classical delivery [15]. Severe PPH is associated with bad memories of delivery and persistent, disturbing, recurring flashbacks, fear of death and alteration of sex life [16].

The severe postpartum haemorrhage (SPPH) score associates biological and clinical parameters to predict the failure of medical treatment in cases of severe PPH [17]. Whether the score can accurately predict the failure of EPH remains unclear.

Accordingly, our study assessed the impact of EPH by:

- identifying the risk factors for EPH in our cohort;
- identifying the risk factors for the failure of EPH;
- evaluating the performance of the SPPH score;
- and assessing the long-term psychological impact of EPH.

2. Methods

Patients were identified from the computerised system of Lariboisière hospital. Any parturient patient admitted to the hospital is registered with a primary diagnosis. PPH was coded as "postpartum complication", "haemorrhagic shock", "acute anaemia" or "shock". These data were crosschecked against the registries of the Department of Obstetrics, the Department of Anaesthesia and Intensive Care and the Department of Radiology. According to the data, 869 patients with PPH were managed in Lariboisière Hospital from 2004 to 2011. The patients were mostly transferred after delivery from 82 primary care centres (academic and non-academic; public and private) located in or around Paris (Île-de-France region). Among these patients, 44 underwent an emergency postpartum hysterectomy (EPH), and 825 patients remained in the control group. For all 44 women, we analysed the medical case records. Information obtained from the medical records included demographic data, relevant past history, details of pregnancy and delivery, including haemorrhage and its management and details of the hysterectomy and postoperative period.

We sent a postal questionnaire to all of the patients in March 2012 (between 3 months and 8 years after EPH, median 26.5 months). This questionnaire asked questions regarding depression and anxiety symptoms, sexual interest and social life. If the patient agreed, a telephone interview was arranged (in April 2012) to administer 2 additional questionnaires: the Hospital Anxiety and Depression Scale (HAD) and Impact of Event Scale–Revised (IES-R). The French version of the questionnaire has been previously validated [18]. This study was approved by the local ethics committee (CEERB no. 11-016), and the requirement for written informed consent was waived by the committee.

Statistics: the results are expressed as means and standard deviations (sd), medians and first to third quartiles or counts and percentages. Patients who underwent EPH were compared with patients who benefited from conservative management. Then, two groups of EPH patients were considered. The first group included patients for whom EPH successfully controlled the bleeding ("Successful EPH" group), and the second group included patients for whom an additional advanced interventional procedure (AIP) was necessary ("EPH + AIP" group). As previously described [17], AIP was defined as uterine artery embolization, a surgical procedure (arterial ligation or abdominal packing) or a combination of the two interventions.

Marginal associations between single variables and outcomes were assessed by Wilcoxon's rank-sum test for quantitative variables and Fisher's exact test. Multiple logistic regression was used to determine which variables were independently associated with each outcome (namely the need for EPH and the failure of EPH). Variables associated with the outcomes at a 0.15 level and with less than 5% missing data were considered in the multivariate model. Notably, for clinical application, the following continuous covariates were categorized: systolic blood pressure (SBP) < 90 mm Hg; diastolic blood pressure (DBP) < 55 mmHg; heart rate (HR) > 115 bpm (as described previously [19]); prothrombin time (PT) < 50%; and fibrinogen < 2 g/l; and troponin detectable or not (enabling the use of semi-quantitative measurement). PT and fibrinogen constituted the threshold for fresh frozen plasma (FFP) transfusion at Lariboisière Hospital centre (also described by Charbit et al. [20] as severity factors in PPH). The model selection was based on a backward stepwise variable selection algorithm. The discriminative ability of the final model was evaluated by the c-index (identical to the area under the receiver operating characteristics [ROC] curve) [21]. The ability of the SPPH score [17] to predict the need for an additional AIP after EPH was also estimated by the