Research Article

Peroperatory Function of Anesthesist A Nurse in Vascular Filling in Benin and Togo

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Abstract

Objectives: The problem is: what is the role of the nurse anesthetist in decision making in the management of optimization of vascular filling, in ASA patients 2 to 4 benefiting from moderate to heavy surgery? The main research hypothesis is that nurse anesthetists do not participate very much. The objective is to make an inventory of the decision making in the framework of the optimization of the filling.

Materials and methods: A sample of 71 participants was surveyed, using a questionnaire composed of 22 questions, in paper format, distributed in public, private and religious institutions in Benin and Togo.

Results: 63% of the sample has more than 7 years of seniority in the profession, practices a moderate filling at 85% influenced mainly by the recommendations and they estimate at 93% their filling strategy. This strategy aims to prevent hemodynamic instability to 93%. In addition, they are 81% to be autonomous on filling and to participate in decision making.

Conclusion: It is clear from our sample that most nurse anesthetists participate in decision-making. However, the knowledge of the fields within their competences and knowledge related to optimization of filling, necessary for decision-making seem inconstant.

INTRODUCTION

As in several European countries, Benin and Togo in West Africa, the anaesthetist nurse intervenes in the pre- and post-operative periods and expertise is paramount at both the technical and relational levels [1]. Improved rehabilitation after surgery has become a major public health issue [2]. It itself defined as: an approach to comprehensive management of the patient, promoting the early recovery of his abilities after surgery. Several aspects are taken into account during improved rehabilitation after surgery such as: Multimodal analgesia in all its components, vascular filling, pre-empowerment (fasting, nutrition, and patient information), normo thermia, surgical technique (surgical stress minimisation), early postoperative mobilization, prevention of postoperative vomiting nausea (NVPO) [2]. Faced with this multitude of practices, we asked ourselves: How is vascular filling, she consisted an technique of infusing a "filling liquid" through a venous pathway to combat a drop in blood flow. The latter cause's low blood pressure that can have harmful consequences.

We sometimes talk about volemic expansion in the same direction, volemia being the amount of fluid contained in the blood vessels. Done today in ASA 2 to 4 patients, because it is in these patients that optimization of filling takes on all its importance, because it can be as beneficial as it is harmful?

This question led us to ask the following question: What is the role of the anaesthetist nurse in decision-making in the management of vascular filling optimization, in PATIENTS ASA 2 to 4 benefiting from moderate to heavy surgery?

As a result of this problem, several research hypotheses emerge:

- Our anaesthetist nurses do not have the knowledge and skills to participate in decision-making in the management of vascular filling optimization.

- Our anaesthetist nurses want to be involved in this decision-making but do not contribute to it on a daily basis.

- Our anaesthetist nurses have little involvement in decision-making and want to be more involved in this decision-making.

As part of the management of filling optimization, in ASA 2 to 4 patients undergoing moderate to heavy surgery, the objective of the research was to take stock of the situation, on the place of anaesthetist nurses in decision-making.

MATERIALS AND METHODS

A descriptive and analytical study was conducted over a 3-month period from September 1, 2018 to December 1, 2018. A survey tool addressed to a target population, practicing anaesthetist nurses, allowing a quantitative and qualitative study. It allowed us to have a more representative statistic of decision-making behaviours. The target population of our research was a sample of anaesthetist nurses working in public, private or denominational institutions in Benin and Togo caring for ASA 2 to 4 patients with moderate to heavy surgery. We have targeted a total of 14 hospitals in Benin and Togo for the dissemination of our survey tool.

Everyone who responded to our survey did so on a voluntary basis and anonymity. The questionnaire targets only qualified anaesthetist nurses working in operating theatres in public, private or denominational structures in Benin and Togo. The anonymity of these hospitals has also been preserved.

We chose the semi-directed questionnaire, in order to be able to interview a large number of anaesthetist nurses, and so that the answers obtained were representative of the study population. We built our questionnaire with the objective that it is understandable, simple, clear and quick to complete. To help us optimize it, we were able to test it in real condition in an operating theatre with 10 anaesthetist nurses. Through their return and observations, we have modified or clarified some of the issues.

The format of the chosen tool has the advantage of being easy to disseminate in operating theatres after agreement of the care directorate and having a quantitative follow-up of returns to each block where they were distributed. Our questionnaire (Table I) consists of 22 questions, including 3 short open-answer questions (QROC) and 19 multiple-choice questions (MQS).

The counting and operation of each questionnaire was carried out by Excel® software.

RESULTS

We received 71 returns (n -71/100) to the survey spread over the 14 sites. This sample consists of 18 anaesthetist nurses with less than 3 years of seniority, 45 anaesthetist nurses with more than 7 years of experience or 63% of the sample and 11% between 3 and 7 years of experience.

Based on their vascular filling practices, it appears that anaesthetist nurses have a moderate filling strategy of 85%. It is influenced mainly by the recommendations of learned societies at 73% and anaesthetists resuscitators in the same proportions. Their personal knowledge also has a role in the filling strategy for 65% of anaesthetist nurses. Finally, service habits and protocols in the anesthesia departments play a prominent role in vascular filling, accounting for 27% and 25% of respondents respectively. In the absence of monitoring, anaesthetist nurses responded to the essential use of blood pressure at 66% to guide their vascular filling. But also heart rate, at 60%. Then comes the losses and diuresis of patients in intraoperative for 41% of them.

For the question of the criteria for cardiac rate monitoring, for 70% of our sample, it is the patient's history and the type of surgery that guides the implementation of this tool and for 91% of anaesthetist nurses, it would be an evaluation of the effectiveness of the filling. When asked about their knowledge to assess the impact of their knowledge on their vascular filling practice, 93% of anaesthetist nurses say they have a moderate filling strategy to prevent hemodynamic instability, and 82% of them use moderate vascular filling in order to anticipate liquid losses. Then comes the compensation of fasting in 82% of respondents, then limit the risk of water overload in 62% of responses and finally the prevention of postoperative vomiting nausea for 44% of anaesthetist nurses. 27% of participants did not answer this question.

On the prioritization of responses, we find that preventing hemodynamic instability was a priority, compensating for fasting came second then the anticipation of fluid losses and finally the prevention of postoperative vomiting. Approximately 30% of anaesthetist nurses did not prioritize their responses.

Related to knowledge about improved rehabilitation after surgery the responses were shared with 51% "NO" and 49% "YES." In addition, 25% of our sample said it was practiced in their institutions, 40% said it was not, and 21% did not.

On the question of the definition of filling optimization, 31% or 22 people did not wish to answer this question. For those who responded, it was mainly an adaptation of the contributions according to the terrain and surgery (43%) sufficient intake to maintain optimal heart rate (26%).

The parameters influenced by vascular filling were for 91% of anaesthetist nurses was hemodynamic, postoperative rehabilitation and morbi-mortality for 80% of them and then the length of stay in 65% of the responses. For 35% of anaesthetist nurses, vascular filling also has a role on postoperative vomiting nausea.

On the other hand, respondents said they were moderately comfortable with the use of monitoring at 62%, only 9% felt uncomfortable and 28% were perfectly comfortable. In addition, 52% said they had never been trained in their use, 25% had continuous training during their careers and 20% said they had received initial training in their use.

Nurse anaesthetists were also consulted on decision-making and their autonomy in achieving vascular filling optimization. 81% estimate that they have autonomy in this task. 71% say they have a role in choosing the filling solute. 81% of our sample is preceded by a participatory discussion on the strategy to be adopted with the resuscitator anaesthetist.

In our study, 62% of anaesthetist nurses want to participate in decision-making, 38% do not want it because they say, in a homogeneous way, not to be a doctor, to have a "lack of knowledge" or because decisions are "already decided upstream".

In recognition of their vascular filling skills 49% of anaesthetist nurses believe that "YES" their competence is recognized versus 45% of "NO". For 63% of respondents who answered "YES" to this question, the ASA score would not influence the recognition of this skill, while for 17% of them the ASA score would influence this recognition of the vascular filling skills of anaesthetist.

DISCUSSION

Commonly, surgeries are classified into three classes, minor, moderate and heavy surgeries. There is no official definition, but it is possible to classify them as follows: Minor surgery (minimal or non-invasive surgical procedures, outpatient procedure), heavy surgery (surgery resulting in an inflammatory reaction, modifying microcirculation and major body regulation mechanisms) and moderate surgery (surgery that has more impact than minor surgery but less than heavy surgery). The ASA score is used to assess the anaesthetic risk based on the patient's condition. It was created in 1941 by Dr. MEYER Saklad for the American Society of Anesthesiologists [3]. It is divided into six categories: ASA 1 (normal patient), ASA 2 (patient with moderate systemic abnormality), ASA 3 (patient with severe systemic abnormality), ASA 4 (patient with severe systemic abnormality representing a constant vital threat), ASA 5 (a moribund patient whose survival is unlikely without the intervention), ASA 6 (patient declared brain dead whose organs are taken for transplantation). The letter "U" is added in case of emergency response. The theme of vascular filling caught our attention because it is an individualized management of water intakes in which anaesthetist nurses have a role to play. We have chosen to focus our research on moderate and heavy surgeries because it is in these cases that vascular filling has a major impact [4]. The objective of this work was to take stock of the decision-making of anaesthetist nurses in the context of the optimization of vascular filling. To this end, several research hypotheses have been explored to answer this objective and the research question. Experience, knowledge and knowledge are at the heart of decision-making because they contribute to situational awareness. The questionnaire evaluates this knowledge on different topics related to filling optimization. It was returned, 71 actionable questionnaires out of the 100 sent either or 70% back. This sample is composed mainly of experienced anaesthetist nurses with seniority in the profession of more than 7 years. This finding can be observed on almost all of the sites surveyed.

When it came to the practice of vascular filling, the anaesthetist nurses interviewed performed a moderate 85% vascular filling, regardless of their professional experience. This attitude appears to us to be cautious and joins those who denounce the risk due to therapeutics, of an insufficient intake too restrictive or on the contrary too excessive fluid exposing the patient to an increase in the occurrence of post-operative complications with an increased length of stay and an increased cost [5,6]. It is a strategy largely influenced by the recommendations of learned societies [7]. Indeed, the scientific literature mentions that vascular filling has an impact on morbidity, length of stay, hemodynamics and the prevention of Postoperative Vomiting Nausea [8], results mostly found in the responses of the professionals questioned. A correlation is found in the results, between the data of people influenced or not by the recommendations and the number of parameters influenced by known vascular filling. Nurse anaesthetists influenced by the recommendations were those who knew the parameters influencing vascular filling. The work in collaboration with the anaesthetist is highlighted in the responses obtained during the management of the vascular filling strategy. Nearly 65% of anaesthetist nurses surveyed emphasize the importance of personal knowledge in optimizing vascular filling to prevent hemodynamic instability. To our knowledge, this is a very important factor for any nurse anaesthetist who wants to be self-sufficient. Indeed, a study carried out in Sweden showed that a variability of criteria interact in the decision-making of anaesthetic nurses in the operating theatre but all depending for the most part on the prior knowledge acquired [9]. Based on knowledge of the monitoring tools available to them, respondents said they were moderately comfortable using monitoring at 62%, only 9% felt uncomfortable and 28% were perfectly comfortable. In addition, 52% said they had never been trained in their use, 25% had continuous training during their careers and 20% said they had received initial training in their use. It appears, therefore, that continuing training in this field of learning allows the professional to feel more confident and therefore more efficient in the management of patients. But if despite an improvement in hemodynamic monitoring techniques, clinical signs remain the usual indicators in the decision of vascular filling during acute circulatory failure, as well as in the evaluation of therapeutic efficacy [10], this defect in our already medically poor environments can be filled by the support of well-trained anaesthetist and resuscitator.

In our study, 62% of anaesthetist nurses want to participate in decision-making, but this decision-making is multifactorial, and influenced by clinical reasoning [11] that takes into account the assessment of risks [9] related to surgery, patient field and anesthesia technique; environmental factors [12] that may be facilitators or barriers to decision-making. However, our study shows that nurse anaesthetists know little about these areas.

It is also noted that respondents are mixed in terms of recognizing their filling optimization skills (49% "YES," 45% "NO"). Finally, within the sample, the majority of anaesthetist

nurses participate in decision-making and wish to do so. However, the knowledge of their skills and knowledge related to the optimization of filling, necessary for decision-making, seems uncertain. Risk management is therefore not always efficient because non-technical competence is defined as a "combination of cognitive, social, personal resources complementary to know-how, procedural skills that contribute to efficient and safe performance" [13,14].

We therefore find that the researches hypotheses of this work formulate are invalidated. The anaesthetist nurses in our sample have a central role in decision-making regarding the optimization of filling of ASA 2 to 4 patients, benefiting from heavy to moderate surgery. This decision-making is based mainly on the knowledge acquired by anaesthetist nurses and this is done in close collaboration with the anaesthetist and resuscitator and within the limits of the skills acquired from anaesthetist nurses.

However, there are several biases and limitations to this research work. The questionnaires were sent to institutions with various logistics and work organizations. We cannot confirm the representativeness of our sample. There is also a lack of heterogeneity in the profile of anaesthetist nurses interviewed, most of whom are senior professionals. But more than that, the duration of the questionnaire's distribution on the various sites, 3 months was able to limit the sample. The broadcast format (a questionnaire) was also able to restrict the data collected and the inability to access patient data, in order to contextualize decision-making in a more concrete way.

CONCLUSION

We therefore find that the research hypotheses of our work are not confirmed. The anaesthetist nurses in our sample have a central role in decision-making regarding the optimization of vascular filling of ASA 2 to 4 patients, benefiting from heavy to moderate surgery. This decision-making is based mainly on the knowledge acquired by anaesthetist nurses and this is done in close collaboration with the anaesthetist and resuscitator and within the limits of the skills acquired from anaesthetist nurses.

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QUESTIONNAIRE

Our questionnaire focuses on vascular filling on ASA 2 to 4 patients undergoing moderate to heavy surgery (> 2 hours, having an impact on regulatory mechanisms).

1. How long have you been in the AI business?

□ under 3 □ 3 to 7 years □ over 7 years

2. How would you describe your filling strategy?

restrictive □ (< 4ml/kg/h) moderate □ (4 to 10 ml/kg/h) □ wide (>10ml/kg/h)

3. Why do you choose this strategy? (Several possible answers) prioritize your answers: 1 - essential -> 6 - optional.

□ prevent hemodynamic instability □ compensate for fasting

□ prevent post-operative vomiting □ anticipate fluid loss

□ limit the risk of water overload □ others: ......

4. Are you self-sufficient in achieving vascular filling?

□ YES □ NO

5. The implementation of your filling strategy is influenced by: (several possible answers)

□ service habits □ personal knowledge

□ the recommendations □ MAR referennt of the room

□ protocols □ other: ......

6. Do you have a role in choosing the filling solute?

□ YES □ NO

7. Are you familiar with the Improved Rehabilitation After Surgery (RAAC) program?

□ YES □ NO

8. Is it practiced in your establishment?

□ YES □ NO

9. How would you define filling optimization?

………..

10. What do you think vascular filling affects? (Several possible answers)

□ length of stay □ post-operative vomiting nausea

□ pain □ post-operative rehabilitation

□ morbi-mortality □ □

□ other: ......

11. In the absence of cardiac flow monitoring what elements guide the management of your vascular filling strategy?

…….

12. What criteria do you think should be required to set up a cardiac flow monitoring?

…….

13. Do you assess the effectiveness of the vascular filling in place?

□ YES □ NO

14. What types of monitoring do you have in your department?

□ Vigileo □ esophageal doppler □ KTA

□ Pulse □ Clear Sight □ Transthoracic Impedance

□ Picco □ Swan Ganz □ others: ......

15. Among your previous answers, overall do you feel comfortable using all the devices?

□ perfectly comfortable □ moderately comfortable □ uncomfortable

16. Have you been trained?

initial □ □ continues □ no training

17. In advance of the care, did you have a participatory exchange with the MAR on the anesthetic strategy?

□ YES □ NO

18. Who decides what kind of monitoring to set up?

□ IADE □ MAR □ IADE - MAR

19. Would you have liked to be part of the decision-making on the filling strategy?

□ YES □ NO

If not, why? ....

20. On what subjects do you think you have decision-making skills on?

□ the implementation of monitoring □ type of solute

□ type of monitoring used □ amount of solute administered

21. Do you think that the IADES skills for establishing a vascular filling strategy for scheduled surgery greater than 2 hours are recognized?

□ YES □ NO

17. In advance of the care, did you have a participatory exchange with the MAR on the anesthetic strategy?

□ YES □ NO

18. Who decides what kind of monitoring to set up?

□ IADE □ MAR □ IADE - MAR

19. Would you have liked to be part of the decision-making on the filling strategy?

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