

Anaesthetic Practice in a Regional Hospital of Togo: A Retrospective Study about 1072 Cases at Kara Teaching Hospital

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Abstract

Background and Aim: There has been a significant decrease in perioperative mortality in developed countries over the past 5 decades but anaesthesia is still a risk in developing countries. The aim of this study was to review one year of anaesthetic practice at the Teaching Hospital of Kara (CHU Kara) in Togo.

Methods: The anaesthesia was provided by 5 non-medical anesthetists. The study was retrospective and covers a period from January to December 2015, including medical files of patients undergoing anaesthesia.

Results: 1072 files have been included in the study. Predominantly female (64.9%), the patients' average age was 30.9 ± 14.6 years. Emergencies predominated: 72%. Gynecological and obstetric surgery were the most represented (55.2%), followed by abdominal (27.3%), trauma (16%), ENT (1%), and ophthalmology (0.5%). ASA classification: ASA 1: 79.5%, ASA 2: 16.5%, ASA 3: 3.7%, ASA 4: 0.3%. General anaesthesia (GA) was performed for 68%, and spinal anaesthesia (SA) for 32%. Perioperative complications have occurred for 275 (25.6%) patients. These complications were mostly cardio-vascular: 7.5% and respiratory: 2.1%. Eleven patients died rate 1.026 %.

Conclusion: The anaesthetic practice at CHU Kara was characterized by a paramedical staff performing anaesthesia, few anaesthetic facilities and equipment. This practice leads inevitably to many complications and deaths.

Keywords: Anaesthetic Practice; Morbidity; Mortality; Togo

Introduction

There has been a significant decrease in perioperative mortality in developed countries over the past 5 decades but anaesthesia is still a risk in developing countries [1-3]. Previous studies in Togo showed a high perioperative morbidity and mortality rate [4,5]. Most of these studies were conducted in the national referral center. Anaesthetic practice is not at the same level in the provincial hospitals where staff is often constituted of nurse anaesthetists with little equipment. We aim to report in this study the anaesthetic practice in the Teaching Hospital of Kara (CHU Kara) in the North of Togo. This hospital has 2 operating rooms (OR) and anaesthesia is performed by 5 nurse anaesthetists without a medically qualified specialist or professional anaesthetist. The primary outcome of this study was to describe anaesthetic practice and secondarily to analyze complications and deaths that occurred.

Patients and Methods

After the approval of the Local Ethics Committee, we retrospectively reviewed the anesthetic and hospital notes of all patients who had operations in CHU Kara between the 1st January and 31st December 2015 under the care of a nurse anaesthetist. Cases involving local anesthesia performed by surgeons were excluded from analysis. Data was obtained from the registers of the surgical and anaesthetic ser-

vices. A standardized form was designed to collect relevant information: age, ASA classification, and type of surgery, anaesthetic technique and complications. Peroperative and 24 postoperative hours' complications and deaths were recorded. The different types of complications were retrieved from the anaesthetic charts. In addition, some of the anaesthetists practicing anaesthesia for patients during the period study were questioned on the anaesthetic technique used and complications. The objective of this interrogation was to control the exhaustiveness of the data obtained by the analysis of the charts. Counting was manual and data was processed using epi info 3.5 software.

Results

Study Population

The records from 1072 patients were included in the study. Predominantly female (64.9%). The sex-ratio was 0.54. The patients' average age was 30.9 ± 14.6 years. The age groups 16 to 30 years and 31 to 45 years were the most represented (81%). Emergencies predominated: 72%. Different types of surgery included Gynecologic and obstetric (55.2%), abdominal (27.3%), trauma and orthopedic (16%), ENT (1%), and ophthalmology (0.5%). Table 1 summarizes patients' demographics and types of surgery.

	N (%)
Age (years)	
0 - 15	95 (8.8)
16 - 30	557 (52)
31 - 45	311 (29)
46 - 60	80 (7.5)
> 61	29 (2.7)
Sex	
Female	696 (64.9)
Male	376 (35.1)
ASA*	
I-II	1029 (96)
III-IV	43 (4)
Emergency	772 (72)
Schedule	300 (28)
Types of Surgery	
Gynaecologic and obstetrics	592 (55.2)
Abdominal	293 (27.3)
Trauma and orthopedics	171 (16)
ENT	11 (1.0)
Ophthalmology	5 (0.5)

Table 1: Patients demographics and types of surgery.

ASA*: American Anesthesiologists Society Physical Status Score

Anaesthetic assessment and technique

All patients had a preoperative assessment. ASA physical status classification was as follows: ASA 1: 79.5%, ASA 2: 16.5%, ASA 3: 3.7%, ASA 4: 0.3%.

General anaesthesia (GA) was performed in 68% and spinal anaesthesia (SA) in 32%. Spinal needle 25 gauge were used and Bupivacaine 0.5% hyperbaric used for SA. For GA, Thiopental (49%), Ketamine (19.8%), Propofol (18.1%) were the most intravenous anaesthetic agents used. Fentanyl (28.5%) and Pethidine (18.6%) were the opioids used. Halothane (20.8%) and Isoflurane (7.7%) were the inhaled agents used. Muscle relaxant agents used were Pancuronium (21.6%) and Succinylcholine (0.8%). The Airways were controlled by tracheal intubation for 384 patients (52.7% of the patients undergone GA). They were ventilated manually and for the remainder of patients, GA was performed under spontaneous ventilation via facial masks.

At the end of the surgery 92% were transferred after awakening straight to a hospital room and the others (8%) were transferred to the intensive care unit.

Monitoring

Monitoring device available and used for all patients were stethoscope, pulse oxymeter and non-invasive blood pressure sphygmomanometer. Capnography, electrocardiogram, temperature, and monitoring of neuromuscular function were not used because there were none available.

Morbidity and mortality related anaesthesia

Perioperative complications have occurred in 275 (25.6%) patients. These complications occurred in OR in 178 (16.6%) patients and in the 24 hours post-operative in 97 (9.0%) patients. These complications were mostly cardio-vascular: 80 (7.5%) with 8 cardiac arrests which all lead to death and respiratory: 23 (2.1%) with 2 difficult intubation procedures. Eleven patients died, with a perioperative death rate of 1.026 %. All deaths occurred with emergencies, under GA. Six deceased patients were males, and all deceased were ASA > 2. Six deaths occurred in abdominal and 4 in obstetrics, 1 in trauma. Table 2 and table 3 summarize patients' complications and deaths.

Complications	Intraoperative N (%)	Post-operative: 24h N (%)	Total N (%)
Cardio-vascular	72 (6.7)	8 (0.8)	80 (7.5)
Haemodynamic shock	20 (1.9)	2 (0.2)	22
Cardiac arrests	5 (0.5)	3 (0.3)	8
Hypotension	47 (4.3)	3 (0.3)	50
Respiratory	12 (1.2)	11 (1.0)	23 (2.2)
Bronchial Inhalation	2 (0.2)	0	2 (0.2)
Hypoventilation	0 (0)	11 (1.0)	11 (1.0)
Intubation difficult	2 (0.2)	0 (0)	2 (0.2)
Pulmonary oedema	4 (0.4)	0 (0)	4 (0.4)
Bronchospasm	4 (0.4)	0 (0)	4 (0.4)
Others	94 (8.7)	78 (7.3)	172 (16.0)
Acute renal failure	0 (0)	2 (0.2)	2 (0.2)
Urine retention	0 (0)	8 (0.7)	8 (0.7)
Nausea and vomiting	67 (6.2)	3 (0.3)	70 (6.5)
Agitations	27 (2.5)	48 (4.5)	75 (7.0)
Shivering	0 (0)	17 (1.6)	17 (1.6)
Total	178 (16.6)	97 (9.0)	275 (25.6)

Table 2: Perioperative complications.

Period	Patient	Age (years)	Sex	ASA	Diagnosis	Death cause
	1	39	F*	III	Eclampsia	Pulmonary edema
Intraoperative	2	48	M**	III	Peritonitis	Septic shock
	3	47	M	III	Peritonitis	Bronchial inhalation
	4	38	F	III	Uterine rupture	Haemorrhagic shock
	5	27	M	III	Bowel obstruction	Bronchial Inhalation
	6	62	M	III	Leg gangrenous wound	Septic shock
Postoperative	7	70	M	IV	Peritonitis	Septic shock
	8	52	M	III	Spleen rupture	Haemorrhagic shock
	9	33	F	III	Uterine Rupture	Haemorrhagic shock
	10	43	F	III	Eclampsia	Haemorrhagic shock
	11	24	F	IV	Postoperative peritonitis	Septic shock

Table 3: Perioperative deaths characteristics.

F: Female; M**: Male*

Discussion

Limits of the study

This retrospective study reveals the inadequacies inherent to this methodology. However this study allowed us to draw conclusions about the anaesthetic practice at CHU Kara regional hospital.

Epidemiology

The total number of files recorded for one year of anaesthetic practice was 1072 at CHU Kara. This represents about 2.9 anaesthesia per day for the two OR. This caseload remains not enough for anaesthetic teams to get optimal experience for good practice. Some reasons can partially explain this low rate of practice such as patients being operated under local anaesthesia performed by surgeons themselves and the financial difficulties which prevent the access to surgical care. The predominance of female patients is explained by the regularity of obstetric interventions in this hospital. The high incidence of emergencies (72%) confirms the fact that patients consult at the last moment, at the stage of complications.

Anaesthetic staff and monitoring

Anaesthetic staff in CHU Kara was represented by nurse anaesthetists only. There was no medical specialized direction as recommended in these cases [6]. This situation is often observed in Sub-Saharan hospitals and despite efforts to train anaesthetist doctors, their number remains very insufficient [7,8]. Additional efforts must be made to train a sufficient number of both medical and nurse anaesthetists.

The monitoring devices available consisting of stethoscope, pulse oxymeter and sphygmomanometer were the minimal recommended for this level [6]. However this remains insufficient. More monitoring including electrocardiogram and training of nurses in the detection of ECG major disorders can be an advance in the early detection of arrhythmias and cardiac arrests and their management.

Anaesthetic techniques

GA was the anaesthetic technique performed the most. Apart from emergencies with patients in poor clinical condition and abdominal surgery, another reason for the prevalence of GA, was the low popularization of SA among nurse anaesthetists at CHU Kara. Much practice needs to be improved. Concerning drugs used, Fentanyl and Pethidine were the opioids available despite their adverse effects and their accumulation leading to delay awakening, and hypoventilation. Muscle relaxant available were Pancuronium, used despite its low onset

of action and long duration leading to hypoventilation in the postoperative. In the case of full stomach, one of the muscle relaxant recommended is Succinylcholine, because of its quick onset allowing quick intubation to avoid gastric content inhalation. This drug was rarely available despite its low cost and was used for only 9 patients. Halothane and Isoflurane were the inhaled anaesthetic agents available. Halothane is an excellent agent for inducing anaesthesia in children. This anaesthetic gas is no longer recommended because of its hepatic toxicity. In addition it becomes difficult to obtain because no longer produced. Sevoflurane judged expensive is not yet available at CHU Kara.

Only 52% of the patients under GA had tracheal intubation despite full stomach risk. Gastric content inhaled recorded may therefore be explained by this practice. Mechanical ventilation was not used in a single case, patients were ventilate manually.

Morbidity and mortality

The analysis of complications showed that some as bronchospasm or gastric content inhalation were related first to anaesthesia as outlined above. Other complications such as hemodynamic shock, cardiac arrests were first related to patients' conditions. Those in fact consulted late when septic or haemorrhagic shock was already settled. In this study 4 of the 11 deaths were maternal caused by haemorrhage and eclampsia. Eclampsia often complicates pregnancy in Sub-Saharan Africa and would result from women's difficult access to obstetric care [9,10]. Haemorrhage and hypertensive disorders including eclampsia, were recognized to be the main causes of maternal death in sub-Saharan Africa [11,12].

The overall perioperative mortality in this study of 1.026% remains very high. Previous study in a regional hospital of Togo showed a rate of 1.9% [13]. The mortality at the national referral center although high (0.89%) was lower and raised the impact of medical anaesthetists on care [5]. This high rate is common to developing countries and often explained by the shortage of qualified personnel to provide anaesthesia, drug and monitoring [1-3,8].

How to improve?

The safety of anaesthesia in the regional hospital CHU Kara can be improved by

- Establishment of clear protocols for the management of anaesthesiological emergencies.
- Implementation of essentials medicines for emergencies.
- Equipping the anaesthesia sites with the minimum.
- Training of medical anaesthetists and encouraging them to practice in the province.

Conclusion

The anaesthetic practice at CHU Kara was characterized by a paramedical staff performing anaesthesia, few anaesthetic facilities and equipment. This practice leads inevitably to many complications and deaths.

Conflict of Interest

Authors declare no conflict of interest.

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