Experimental
&
Clinical Article

One Year Obstetric Experience with Extreme Complications in a Tertiary Center in Somalia

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ABSTRACT

OBJECTIVE: The maternal mortality rate is very high in Sub-Saharan African countries with extreme complications not seen in developed countries. We aimed to analyze and compile data on obstetric emergencies and complications in a tertiary center in Somalia.

STUDY DESIGN: The files of all patients who visited the obstetrics clinic in Somalia Recep Tayyip Erdogan Training and Research Hospital between January 2018 and December 2018 were retrospectively scanned. All maternal demographic data, prenatal hemoglobin levels, serological markers, and complications were recorded. The correlation between the birth process and hemoglobin change was examined.

RESULTS: A total of 825 cases were identified. Overall, we found serious maternal complications: eclampsia, 12.4%; postpartum bleeding, 8.7%; placenta previa, 2.1%; placenta insertion anomalies, 1.4%; uterine rupture, 2.4%; and placental abruption, 2.5%. The mean hemoglobin value on admission was 10.39±1.74 g/dL. Further, the hemoglobin difference increased in low and high dilatation numbers. A low-level positive correlation was found between delivery time and the hemoglobin difference (r=0.23) and between delivery time and fetal complications (r=0.2).

CONCLUSION: Postpartum bleeding and eclampsia were among the leading causes of maternal mortality in Somalia. In addition, insufficient surgical techniques and unsuitable environments increase maternal mortality.

Keywords: Maternal mortality, Maternal morbidity, Obstetric complication, Somalia

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Introduction

Africa has been in the grip of hunger, poverty, drought, and internal turmoil for centuries. The lack of strong governments, infrastructure, a motivated and disciplined army, and recurring civil wars are among the causes of instability in almost all continents except for a few states. In addition, maternal and neonatal morbidity and mortality are very high due to inadequate health systems and inexperienced health personnel. According to World Health Organization (WHO) (1) data, approximately 525 maternal deaths occur per 100 thousand live births in underdeveloped African countries (1). Although neonatal death was 61 per 1000 live births in the Further, accurate population and health statistics cannot be obtained in underdeveloped African countries due to unstable governments and security problems.

Turkey has built a modern hospital, Somalia Recep Tayyip Erdogan Training, and Research Hospital, in Mogadishu, Somalia. Hospital medical staff and equipment are supplied from Turkey. Our hospital is a reference hospital in Somalia, and therefore serious maternal complications and diseases are referred to us. Given our experience in the Department of Obstetrics and Gynecology of the hospital and its efficient registration system, we aimed to analyze and compile the cases of rare diseases and complications in developed and developing countries and to discuss the lessons learned during our one-year experience in the delivery room and provide relevant health statistics to the literature. To the best of our knowledge, there are no available health statistics on maternal mortality and morbidity in Somalia.

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Material and Method

This was a retrospective study. The study was conducted in accordance with the Declaration of Helsinki, the informed consent form was obtained for data and local ethics committee approval was obtained (28.10.2018 / MSTH-5229). All patients who visited the Recep Tayyip Erdogan Training and Research Hospital Gynecology and Obstetrics Clinic between January and December 2018 and received inpatient treatment were included in the study. Cases with incomplete medical records were excluded from the study. Patients from all regions of Somalia were admitted to our hospital. Examples of files include records of patients who had undergone vaginal and cesarean deliveries. The resident doctor, who spoke the local language, was involved in the analysis of data. Demographic data such as age, gravida, parity, abortion, dilatation, and curettage (D&C), body mass index (BMI), blood group, RH factor, fetus number, pregnancy week, patient history, patient diagnosis, and female genital mutilation (FGM) were obtained from the patient files. From the biochemically analyzed blood sample results, serological data such as preoperative (preop) hemoglobin (HGB), preoperative hematocrit (HTC), postoperative (postop) HGB, postop HTC, Hepatitis B, C, and HIV were obtained. It was planned to record patient data involving pelvic examination, induction, delivery duration, latent phase, active phase, maternal complications, fetal complications, maternal death, fetal death, the form of birth, vacuum, APGAR 1/5 score, baby weight, and gender.

Statistical analysis

Statistical analyses were performed using SPSS version 23.0 (IBM Corp., Armonk, N.Y., USA). Data means, medians, and modes were determined, and Kolmogorov-Smirnov normal distribution tests were performed. Pearson's correlation analysis was applied to the data conforming to a normal distribution. *P*-values <0.05 were considered statistically significant.

Results

A total of 825 cases were included in the study. The means of demographic data were shown in table I. According to the data, the mean age was 26.65±5.66, BMI was 28.9±6.23 kg/m^2, gravida was 14.3±5.21, parity was 12.2±4.53, abortus was 7±1.52, and D&C was 2±0.12. The maternal blood group data were as follows; A: 30.2%, B: 9.3%, AB: 2.4%, 0: 58.1%, Rh+95.3%, and Rh-4.7%. In addition, the percentages of baby gender male/female were found as 53%/47%, baby weight was 3050.4±758.40g, APGAR 1/5 was 6.67±2.39/ 7.61±2.63, FGM rate was 99.1%, HBsAg+rate was 13.2%, anti HCV+rate was 0.6%, and HIV rate was 0.5% (Table I).

Table I: *Demographic variables*

Age (year)		26.65±5.66
BMI (kg/m2)		28.9±6.23
Gravida		14.3±5.21 (1-16)
Parity		12.2±4.53 (0-14)
Abortion		7±1.52 (1-10)
DC		2±0.12(0-2)
Fetus count (%)	Singleton pregnancy	96.8
	Multiple pregnancy	3.2
Pregnancy week		37.56±2.93(20-42)
FGM (Type 3) (%)		99.1

Data are given as mean ± SD and percentage. BMI: Body mass index, DC: Dilatation & Curettage, FGM: Female genital mutilation.

The mean of data on the birth and birth process were shown in table II. Gestational age was found as 37.56±2.93,

Table II: *Labor, delivery process, and obstetric variables*

Pelvic examination (cm)		5.03±0.80 (0-10)
Induction (%)		15
Delivery duration (hour)		5.37±0.74 (0.1-34)
Latent phase (hour)		5.58±4.69 (1-18)
Active phase (hour)		4.03±0.96 (0.1-30)
Mode of deliveries (%)	-Vaginal delivery	69
	Vaginal birth after cesarean	3
	-Cesarean section	27.3
Vacuum (%)		8.2
Apgar 1 min		6.67±2.39 (0-9)
Apgar 5 min		7.61±2.63 (0-10)
Newborn weight (gram)		3050.4±75.4 (390-4900)
Newborn gender, M/F (%)	Male	53
	Female	47
Preoperation hemoglobin(g/dL)		10.39±1.74 (4.2-18.3)
Preoperation hematocrit		31.57±5.10 (11-65.6)
Post-operation hemoglobin (g/dL)		9.28±1.67 (9.7-15.9)
Post-operation hematocrit		28.11±4.80 (8.1-51.6)

Data are given as mean ± SD and percentage

cervical dilation at presentation was 5.03±0.80, the induction rate was 15%, total delivery time was 5.37±0.74 hours, active phase was 4.03±0.96 hours. Moreover, the latent phase was 5.58±0.69 hours, vacuum use rate was 8.2%, the vaginal delivery rate was 69.7%, the cesarean delivery rate was 27.3%, the vaginal delivery rate after cesarean section (VBAC) was 3%, singleton pregnancy was 96.8%, and multiple pregnancies was 3.2%.

Maternal and fetal complications were shown in table III. According to data, 35.57% mean mortality-morbidity was represented total maternal complication that resulted in 1.5%maternal death, 0.4% admission to the emergency room, and 25.38% had fetal complications. Preeclampsia-eclampsia represented 12.4% of serious maternal complications, while postpartum bleeding corresponded to 8.7%. In addition, placenta previa was 2.1%, placenta attachment anomaly was 1.4%, the uterine rupture was 2.4%, placental ablation was 2.5%, other reasons were 6.07%, and the rate of pregnant women who had regular access to a doctor was 10.4% (Table III). Some serious complications are seen in figure 1.

Figure 1: *A: Urethra closed after female genital mutilation, B: Right uterine artery bleeding, C: Hysterectomy after uterine rupture, D: Fetus is seen abdominal cavity after uterine rupture, E: Fetal extremity anomaly, F: Rupture of the corpus uteri, G: Failed breech birth and ex fetus*

The mean HGB value at admission was 10.39±1.74 g/dL and postpartum HGB was 9.28±1.67 g/dL. The average HGB difference before and after birth was found as 1.09 g/dL. The relationship between the cervical opening at the time of admission in the hospital and the HGB difference before and after birth was examined. HGB change was observed to increase in low and high cervical dilatation numbers (Figure 2). A weak positive correlation was found between the delivery period and hemoglobin change (r=0.23). There was no relationship between birth weight, sex, and blood type HGB changes (r=0). There was a weak negative correlation between gravida and parity and HGB change. A weak positive correlation was found between gestational age and HGB change (r=0.1). A weak positive correlation was found between the duration of delivery and fetal complications (r=0.2). A positive correlation was found between BMI and fetal weight (r=0.64).

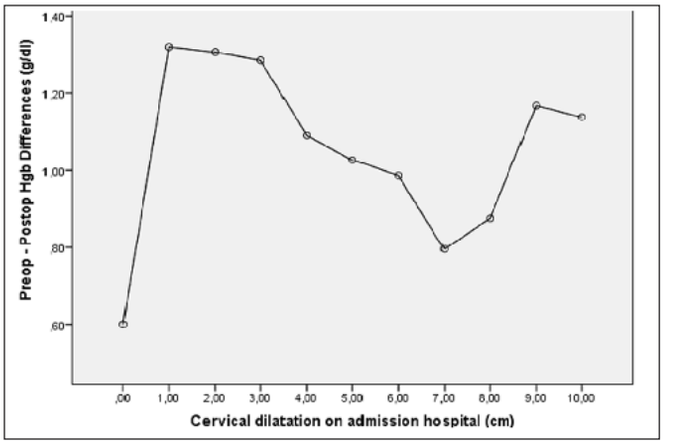

Figure 2: *The relationship between cervical dilatation at the time of admission and hemoglobin differences (g/dL).*

Discussion

Health statistics, mortality, and morbidity data are not available in most underdeveloped African countries. This is because government authorities and health systems are very inadequate and lack resources. The reliability of existing data is controversial. Maternal mortality is increasing daily according to WHO data. Approximately 86% of maternal deaths are seen in African countries (1). According to 2017 WHO data, the maternal mortality rate is 462/100,000 births in less developed countries, while it is around 11/100,000 in high-income developed countries (1).

The maternal mortality rate in our hospital was 1.5%.

Table III: *Maternal and fetal complications*

Maternal complication (%)	Eclampsia	12.4
	Postpartum hemorrhage	8.7
	Placenta Previa	2.1
	Placental attachment anomalies	1.4
	Uterine rupture	2.4
	Ablation placenta	2.5
	Other	6.07
	Total	35.57
Fetal complication (%)		25.38

Data are given as percentages.

However, when the rate of admission in a state of cardiac arrest was added to the emergency department, the new rate added up to 1.9%. In other words, maternal mortality was approximately 1500-1900/100.000. These rates are well above the available data in the literature (1). These data did not include those who were buried unregistered after death at home. In addition, serious maternal deaths occur due to other reasons such as bomb attacks and accidents.

Since home birth is a common tradition, complications of bleeding, infection, and eclampsia often occur as a result of delivery under unhealthy conditions, and hospital admission is delayed. Traditional treatments are usually administered, and the mother is unfortunately brought to the hospital at an irreversible stage where shock symptoms have progressed. In most cases, the mother died on her way to the hospital.

The morbidity data demonstrated that approximately 36% of cases had maternal complications, while fetal complications were seen in 25% of cases. The leading causes of serious maternal morbidity have been found as eclampsia (12.4%), postpartum hemorrhage (8.7%), placenta previa (2.1%), placenta adhesion anomalies (1.4%), the uterine rupture (2.4%), and abruption of the placenta (2.5%). The most common cause of mortality is eclampsia. It is known that eclampsia is more common among Black than White people (2). Admissions to our hospital due to eclampsia were usually made at the end of the third trimester for an average of 38 weeks. In addition, eclampsia is severe among the Black population, which explains the reason for the high death rates (3,4). Severe onset eclampsia is more common in patients with direct seizures and without any preeclampsia findings. In the current study, severe eclampsia was observed more than preeclampsia. The patients did not admit to the hospital when there were signs of preeclampsia. Most cases were admitted to the hospital after several seizures at home. Unfortunately, most patients died in the intensive care unit.

Another cause of mortality and morbidity is uterine rupture. The incidence of uterine rupture is reported at a rate of 0.3% in the literature (5-7). However, these data are obtained from developed countries. This rate is higher in sub-Saharan African countries such as Somalia. In the hospital where the study was carried out in Somalia, we encountered a very high rate of uterine rupture (2.4%). One of the most important reasons for the rupture of the scarred uterus is the cesarean section performed by inexperienced medical personnel of Somalia in unsuitable operating room conditions. Cesarean operations performed with inadequate surgical techniques and not closing the uterine incision with the appropriate technique are the most important factors. Uterine incisions are made with a classical vertical incision, and the defect in the myometrium is not closed with appropriate surgical techniques and suture materials. The most important cause of uterine ruptures after previous surgery is inadequate healing of the defect in the uterus caused by inadequate surgical methods. Unscarred uterine ruptures are caused by prolonged labor, malpresentation, and severe fetal anomalies. Fetal anomalies are seen in very serious dimensions. Fetal tumors and hydrocephalus are the leading tumors.

Female genital mutilation is defined as the partial or complete removal of female external genital organs (8). Every year, 200 million women or young girls around the world are circumcised (8). Although the prevalence of FGM varies by country, studies have reported that it is between 0.6 and 98%. It is most frequently performed in African, Middle Eastern, and Asian countries. Somalia (98%), Guinea (97%), Sierra Leone (90%), Mali (89%), Egypt (87%), and Sudan (87%) can be counted among the countries with the highest numbers (9). In our hospital, the rate of FGM was found very high as 99.1%. FGM can cause severe vaginal tears and consequently severe bleeding (10). The average age of application was 8 years. Serious bleeding can be seen during or after the application. In time, narrowing of the vagina occurs and postrenal kidney failure can be seen by closing the urethra, and some cases result in death. Female circumcision is one of the leading causes of maternal mortality and morbidity by causing birth dystocia due to deformation in the vulva and vagina (11) (Figure 2). Ndiaye et al. (11) examined FGM and its related complications and found that the existence of FGM significantly increased the proportion of dystocia (OR=11.5), cesarean section (OR=17.6), episiotomy (OR=64), perineal tears (OR=10, 2), postpartum hemorrhage (OR=13.0), retroverted uterus (OR=14.7), blood transfusions (OR=8.0), and stillbirths (OR=10.2).

The prevalence of anemia in African countries is 80% (12). In the United States, anemia is seen in approximately 5% of cases. Anemia is among the causes of maternal mortality and morbidity (12). In our hospital, the average HGB at admission was 10.3 g/dl and the entire study population was accepted as anemic. In 2002, Nestel et al. (13) reported a lower limit for HGB as 12 g/dl. Anemia continues to be a serious health problem throughout the African continent.

Reasons for high parity (26.65±5.66) at a young age (12.2±4.53) can be explained by several factors. Amongst these, early marriage, malnutrition, lack of regular pregnancy follow-up, and lack of regular health infrastructure may be the cause of high parity at an early age. It is known that as the parity increases, obstetric complications increase (14).

Delivery process data demonstrated that the average baby weight was within acceptable limits. A positive correlation was found between BMI and fetal weight. A relationship between cervical dilatation and HGB change upon admission to the hospital was determined. It was also observed that the difference in HGB increased in low and high dilatation values. Therefore, hospitalization with low cervical dilatation leads to a long-term hospital stay, and hospitalization at an advanced dilatation causes rapid birth and increases the tendency of postpartum bleeding. In addition, induction rates increase due

to low cervical dilatation. This has been noted as a risk factor in existing studies (14).

HIV rate is lower in Somalia as compared to other African countries (15). Among the most important reasons for this, it can be said that the majority of the society is Muslim. HIV transmission risks are, therefore, low in this society (15). Likewise, hepatitis B and C rates are less common than in other African societies.

Limitations of the study: The most important limiting factor is that the data were retrospectively analyzed. In addition, because our hospital was a tertiary center, referral of all serious complications to our hospital may have resulted in the high complication rates. Our study data may not reflect this society as a whole. In addition, many patients who died during transfer and were brought to the emergency department increased the maternal mortality rate.

Consequently, Maternal mortality is very high in the region due to the lack of a stable administration, widespread terror, tribalism, and resort to traditional methods rather than modern medicine. The solution to the problem lies in abandoning the exploitation of the continent, ending terrorism, and strengthening states.

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Availability of data and materials: The data supporting this study is available through the corresponding author upon reasonable request. / The datasets and code used and/or analyzed during the current study are available from the corresponding author on reasonable request.

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Authors' contributions: RE, ZA is raised the presented idea, designed the study, conducted the analyses. RE developed the first draft of the manuscript. All authors contributed to the writing of the paper, and have read and approved the final manuscript. RE participated in data analysis, interpretation, and draft revision. RE and ZA participated in data collection and result interpretation. RE designed the study and critically revised the manuscript. All authors read and approved the final manuscript.

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