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The Prognosis of Obstetric Evacuation in Rural Areas in Senegal, Example of Ourosogui Rural Hospital

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Received date: October 01, 2018; Accepted date: December 12, 2018; Published date: December 20, 2018

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Abstract

Objectives: To describe the epidemiological and clinical profile of the evacuated patients, to analyze the means of evacuation as well as the cost of the evacuation, and finally, to evaluate the maternal-fetal prognosis of the evacuated patients.

Material and methods: We carried out a prospective study going from January to December 2015 covering all obstetric emergencies evacuated at the Ourosogui maternity ward. Study variables: epidemiological; evacuation conditions, diagnostic and therapeutic aspects and prognostic aspects.

Results: The frequency of obstetric evacuation was 66.2%. Our patients were primiparous (39.2%), out of school (85.6%), married (97.7%) and low income (94.7%) with an average age of 24.8 years. The average number of CPNs was 2.6. More than one in three women had 4 CPNs or more (33.6%). The distance traveled averaged 45.6 km with extremes of 1 km to 160 km. The ambulance was used in 90% of cases. The reasons for evacuation were dominated by obstructed labor in 29.4%; hemorrhages in 26.5%. Eight home deliveries and four en route were noted. The maternal prognosis was favorable in 98.6%. Seventeen cases of death were recorded, ie 1.4%. The child was alive and well in 83.2% and deaths accounted for 16%.

Maternal deaths most often occurred among illiterate, low-income, multi-gesting women with fewer than 4CPNs under 35 years of age who traveled long distances and were evacuated by unskilled staff.

Conclusion: Emergency obstetric evacuation represents a major challenge for the health system in the Matam region. Improvements include literacy training for the population, continuous training of health personnel and recruitment of practitioners.

Keywords: Evacuation; Emergency room; Obstetrics; Maternal-fetal prognosis

Introduction

Managing obstetric complications with an effective and consistent health system can significantly reduce maternal deaths in these countries. Such a system involves all levels of care, the offer is up to the specific demand of patients and the links between its levels do not meet obstacles for all women and their families.

The reorganization of the referral/evacuation system was thus carried out in collaboration with the partners to improve the accessibility and the quality of the management of obstetric and surgical emergencies.

This reorganization provided an opportunity for continuous training of the agents and contributed to the improvement of the communication between the actors of the system. However, it requires good communication between the different levels, as well as basic

health centers and a district hospital with adequate technical facilities and qualified and competent staff to solve the majority of the suffering of the population of the district.

Evacuation, which in theory was supposed to enable the pregnant woman to have access to more effective care and save her life, does not always achieve her goals [1,2]. These constraints are even more difficult to overcome when economic conditions are not optimal, and we must adapt to them.

Thus, the lack of previous studies on obstetric evacuation in the Matam region and the difficulties of patient management justify the choice of our study on obstetric evacuation at the Ourosogui Regional Hospital Center.

The overall objective of this study is to assess the prevalence of obstetric evacuation. The specific objectives were (i) to describe the epidemiological and clinical profile of the evacuated patients, (ii) to analyze the means of evacuation, (iii) to evaluate the maternal-fetal prognosis of the evacuated patients, and finally (iii) to draw up recommendations.

Methodology

This is a cross-sectional prospective recruitment study covering a 12-month period from January 1, 2015 to December 31, 2015.

The study concerns all the patients evacuated to the maternity hospital of the Regional Hospital of Ourossoqui during the study period.

The parameters studied were:

- Age, gestationality, parity, marital status, economic level, level of study, prenatal follow-up
- Data on the evacuation (departure time, arrival time, original structure, distance traveled, arrival status, information and means of information on the evacuation, reason and means of evacuation, person having decided on the evacuation, the treatment received before the evacuation, existence and quality of the venous route, the person who accompanied the patient)
- The data in the reception facility (treatment received urgently at the hospital, the age of pregnancy, outcome of pregnancy, diagnosis retained, time taken in charge), the maternal-fetal prognosis, the duration of hospital stay, and
- The means feedback and means used

The entry was made on the Excel software. The exploitation and analysis of the data were carried out thanks to the software Epi info. For the analytical component, Khi2, Student or Fisher tests were used. For each risk factor, the gross Odds Ratio was calculated; in the case of a positive epidemiological association measure, the confidence interval was calculated; a p-value of less than 0.05 was considered statistically significant.

Results

From January 1st to December 31st 2015, we collected 1206 patients evacuated out of 1821 deliveries, a frequency of 66.2%.

Descriptive results

Epidemiological aspects

Age: The average age of our patients was 24.8 with extremes of 12 and 46 years. Adolescent girls (age ≤ 19 years) were dominant, 357 cases or 29.6%.

Gravidity: The average gestational age was 3 with extremes of 1 and 14. Multigestes were dominant, 539 cases or 40.7%; followed by primigest 475 cases with 39.4%.

Parity: The average parity was 2.6 with extremes of 0 and 14. Primiparas were dominant, 39.2% followed by pauciparas 24%.

Progress of the pregnancy

Prenatal follow-up: The mean number of ANC was 2.6 with extremes of 0 and 6. Only 33.6% of patients completed 4 ANC and above. However, 9.8% of the patients performed 0 CPN.

The weight of the patient was recorded in the ANC notebook in 784 patients, 68% versus 421 cases or 34.9% without weight gain and in 1 case the book was forgotten. Blood pressure was monitored in 1072 patients, i.e. 88.9% versus 133 or 11% without blood pressure and the forgotten book was recorded once, i.e. 0.1%.

Albuminuria was performed in 243 women with 20.1% and in 962 cases or 79.8% albuminuria was not performed. The prescription was in adequacy with the diagnosis in 680 cases i.e. 56.4% against 525 cases that is 43.5% of inadequacy.

Age of pregnancy: The majority of patients had an estimated pregnancy of 909 cases or 75.4%. Pregnancy was in the 1st trimester in 4.3% of the cases and in the 2nd trimester for 6.3% then in the post-term in 1%.

Evacuation conditions

Origin: The average distance was 45.6 km with extremes of 1 km to 160 km. Most patients traveled more than 20 km or 68%; those who traveled less than 10 km accounted for only 4.7% of evacuees (Table 1).

Distance in Km	Number of cases	Percentage
<15	57	4,7
15-20	346	30,3
>20	783	68
Total	1206	100

Table 1: Distribution of patients by distance of origin.

Evacuation Way

Evacuation was provided by an ambulance to 1086 patients, 90%; Seventy-seven patients had arrived by their own means (6.4%) and 43 patients had used public transport (3.6%).

In 831 cases (68.9%) the evacuation time was greater than or equal to 30 minutes and 355 cases (31.1%), the evacuation time was less than 30 minutes.

Information before evacuation and reference document

The referring provider had informed the hospital before the evacuation in 868 cases i.e. 71.7% and in 341 cases with 26.3%. Referring provider did not report to hospital.

The reference bulletin was complete in 294 cases or 24.4% incomplete in 898 cases with 74.4% and absent in 14 cases or 1.2%.

Evacuation reasons

The reasons for evacuation were dominated by obstructed labor 354 cases, i.e. 29.4% followed by hemorrhage 320 cases with 26.5% and hypertension and its complications 227 cases, i.e. 18.8% (Table 2).

Motif	Number of Cases	Percentage
Dystocia	354	29,4
Hemorrhage	320	26,5
HTA and complications	227	18,8
Other	305	25,3
Total	1206	100

Table 2: Distribution of patients by evacuation pattern.

Counter-reference way

The counter reference was made in 1140 cases, i.e. 94.5%.

The means used was the telephone in 92.2% of cases; telephone and mail given to the patient in 5 cases, 0.4% and mail delivered to the patient when she left in 1.9% of cases.

Diagnostic and therapeutic aspects

Pathological diagnosed at the entrance: Work was normal at admission in 14.3% of cases. Haemorrhage was the leading diagnosis at entry in 335 cases or 27.8% followed by dystocia in 298 cases or 24.7%. However, we noted 8 cases of home delivery with 0.7% and 4 cases of delivery en route or 0.3% (Table 3).

Diagnosis retained	Number of cases	Percentage
Normal Work	173	14,3
Dystocia	298	24,7
Post-partum hemorrhage	335	27,8
HTA and complications	225	18,7
Home delivery	8	0,7
Delivery on the way	4	0,3
Medical pathology and pregnancy	18	1,5
Surgical pathology and pregnancy	6	0,5
	139	11,5
Other		
Total	1206	100

Table 3: Distribution of patients according to the selected diagnosis.

Supported

All patients were supported in our structure.

Medical treatment: Obstetrical and surgical treatment was supervised by medical treatment. This medical treatment was dominated by the administration of vascular filling fluids in 1180 cases, i.e. 97.8% followed by anti-biotherapy 728 cases or 60.4% and antihypertensive for 105 patients or 8.7%. Blood transfusion was performed in 160 patients, i.e. 13.3%. The injection of magnesium sulfate was performed in 68 patients, i.e. 5.6%. Medical treatment isolated from other procedures was performed in 109 cases, i.e. 9%.

Obstetrical treatment: Caesarean section was performed in 420 cases, i.e. 34.8% (420/1206) of patients, normal delivery in 501 cases (46.8%), instrumental delivery in 63 cases, or 5.9% of patients. The management of abortion by suction or curettage in 51 cases or 4.8%; uterine revision was performed for 17 patients, i.e. 1.6% of the evacuees. Thus, obstetric treatment was performed in 1071 patients, i.e. 88.8% (Table 4).

Treatment obstetrical	Number of cases	Percentage
Normal Child birth	501	46,8
Caesarean	420	39,2
Instrumental	63	5,9

Aspiration	50	4,7
Expulsion	19	1,8
Uterine revision	17	1,6
Curettage	1	0,1
Total	1071	100

Table 4: Distribution of patients by obstetrical treatment.

Surgical treatment: Surgical treatment was performed in 26 cases (2.2%). One-third of the procedures were dominated by haemostatic hysterectomy, episiotomy repair was performed in 26.9% of cases. Salpingotomy and tubal ligation were performed in 15.4% and 3.8% of cases, respectively.

Indications of cesarean section: The indications for cesarean section were dominated by obstructed labor in 170 cases, 40.5% followed by hemorrhage in 107 cases with 25.5%, arterial hypertension and its complications 156 cases, i.e. 25.2%. Acute fetal suffering 19 cases or 4.5%; premature rupture of the membranes in 9 cases with 2.1%; Precious pregnancy, term overtaking and fetal malformations were found respectively 3 cases each or 0.7%.

The hemorrhagic pathologies were dominated by the retro-placental hematoma followed by the placenta previa. Bone abnormalities were predominant in obstructed labor.

Support time

The average time taken to care was 29 minutes with extremes of 5 and 155 minutes. This average time was 26 minutes for cesarized, 20 minutes for laparotomy, 25 minutes for natural vaginal delivery and 27 minutes for instrumental delivery.

Hospital length of stay

The average length of stay was 2.8 days with extremes of 1 and 21 days. This was on average 8 days for patients with morbidity and 2.8 days for patients with no complication. However, the deceased patients had an average length of stay of 2.81 days.

Analytical results

Maternal predictions

Age: Women under the age of 35 accounted for 87.3% compared to 12.7% for the over 35s. There is a statistically significant difference ($p=0.001$). The risk of death for women over the age of 35 was 2.5.

Income level and future of the mother: Death occurred in low-income patients. We did not register deaths in high-and middle-income patients.

Prenatal consultation: The risk of maternal death was higher in patients with less than 4 ANC and maternal death was nil in those patients who had a CPN of ≥ 5 .

Women who performed more than 4 ANCs were 33.6% alive compared to 29.4%. ANC was a protective factor ($OR=0.134$).

Parity: There is a statistically significant relationship between parity and fate of evacuees ($P=0.019$). Maternal death was higher in

multiparous evacuees. For parity greater than or equal (\geq) to 4, we recorded 15 deaths and 2 deaths among primiparas.

Women with more than 5 parents accounted for 18.8% of live births compared to 41.2% of those who died. This difference was statistically significant ($p=0.02$). The risk of death was 3.03 in women over 5 pairs.

Factors related to distance traveled: The deceased women who made more than 20km accounted for 58.8% against 65% among the living. This difference was not statistically significant ($p=0.5$).

Prognostic factors of the child

Qualification of the person evacuating: The death was found in 84% when the follow-up was provided by unskilled personnel against 73% for the living. This difference was statistically significant ($p=0.001$). The risk of death was 1.9 if follow-up was provided by unskilled staff.

Factors related to distance traveled: For a distance greater than 20 km, the child died in 81.5% compared to 7% for children who traveled less than 20km. This difference is statistically significant. The risk of death for the child was 3.4 when the distance is greater than 20 km.

Discussion

Out of 1821 inmates at the maternity ward of the Ourosogui Regional Hospital during the study period, 1206 patients were evacuated at a frequency of 66.2%. This rate is above the 31.2% found by Thiam [3] in the Saint Louis region (North of the country) in 2013, of the 46.7% reported by Cissé [4] in the Kolda region (South of the country) in 2010 and 50.5% of Imbert at the maternity ward of the Dakar Main Hospital [5].

The maximum distance traveled by parturientes was 160 km for a minimum of 1 km or an average of 45.6 km. Sixty-five percent of our patients traveled more than 20 km.

Our results are close to those of Thiam et al., [6] who reported an average distance of 48 km with extremes of 1 and 200 km, 86% of their patients traveled a distance of more than 20 km. Cissé and colleagues [4] in their series reported 84% of patients coming from Kolda districts and 8% of evacuees came from outside the region.

Adequate care and rapid medical management are imperatives to save the life of the mother or fetus in case of life-threatening [7]. Disadvantaged populations show difficulties in accessing obstetric care [7-9].

Long distances and geographical inaccessibility help to make evacuations long and worsen the condition of patients. Indeed, the longer the distance traveled, the higher the risk of maternal and neonatal mortality.

Our results are similar to those of Sépou et al., The most deceased evacuees were those who traveled a long distance [10].

The four minimum antenatal visits recommended by WHO are rarely complete. Women do not start until the 4th month of pregnancy and the completion rate in prenatal consultation (ANC) is very low. Few transhumant women receive skilled assistance during deliveries. Transhumants move beyond the limits of interventions of health posts, transhumance routes not reached by matrons, traditional birth attendants or non-itinerant multi-purpose relays [11].

In our study, only 33.6% of parturients reached the average of at least four prenatal consultations recommended by WHO. The same

observation was made by Thiam and collaborators who found 33.3% of parturients who had 4 CPN [3,8]. This again proves the lack of knowledge of the interest of ANC during pregnancy in the peripheral localities of the country. However, only 25.8% of our patients had 3 CPN. Unlike Cissé in Kolda and Thiam in Ndoum respectively 54% and 53.3% reached the 3 CPN.

In general, the reasons for evacuation were related to obstetric emergencies. In Africa, these emergencies are dominated by dystocia, hemorrhage and infections [3,6]. In our series, the pattern of evacuation was dominated by dystocia followed by hemorrhage and arterial hypertension and its complications.

Our results are superimposable to those of Thiam and collaborators in northern Senegal who found a predominance of dystocia followed by hemorrhage and arterial hypertension and its complications [3]. In contrast, Cissé in southern Senegal found a predominance of hemorrhage followed by dystocia [4]. In the sub region, evacuation patterns are dominated by dystocia followed by hemorrhage and hypertensive emergencies [12,13].

This trend is justified in part by the fact that it is most often pathologies whose management requires a surgical procedure.

On arrival in the structure, there was a difference between the admission diagnosis and the reason for the evacuation. Thus, 14.3% of the evacuations were not justified because it was a normal job. The dystocia was retained as diagnosis at admission in 24.7% of cases against 29.4% as a reason for evacuation. The hemorrhages accounted for 27.8% of diagnoses retained above 26.5% retained as a reason for evacuation.

These same observations were made by Diarra Nama in Côte d'Ivoire. It reported 53.6% of dystocia as a reason for evacuation versus 56.2% of admission diagnoses and 9.9% of hemorrhages as a reason for evacuation compared to 17.6% of admission diagnoses [14].

However, we noted 8 cases of home delivery and 4 cases of delivery en route. This result is in line with African considerations where "the parturient must show her bravery by her ability to bear the pain" as long as possible to the point that some end up giving birth at home or en route.

Another study in France on the effect of distance on deliveries outside the hospital structure concluded that living far from a maternity home increased the risk of giving birth unexpectedly outside maternity. This is particularly evident in rural areas and for multiparous women living more than 30 km from a maternity hospital [9]. Living in very isolated geographical areas as a risk factor for unintended birth outside a maternity ward. This finding has been highlighted in countries such as Finland and Norway [15-17].

Maternal mortality is an indicator of the confluence and summation of social inequalities that affect women. It contributes to the transformation of a natural and happy event into a personal drama in the first place, then social through its perinatal and family repercussions.

Improving the health status of women of childbearing age is dependent on several MDGs, particularly those with a demographic impact. Mortality is very closely correlated with poverty [18].

Only 1.4% of our patients experienced a fatal outcome related to their condition with 15.3% morbidity. This morbidity was dominated by anemia 85.7% followed by hypertension 4.9% and hemorrhage

3.8%. Deaths by direct cause were observed in 94.1% of cases, dominated by HRP 56.3% followed by postpartum hemorrhage 12.5%.

In contrast, Thiam in northern Senegal found 98% of the cases of live and healthy mothers and among the living patients 3.4% had morbidity and recorded 2% of deaths [3,8].

In Benin, Tshabu Aguémon found a case fatality rate of 4.55% and immediate postpartum haemorrhage was the leading cause of maternal death (34.48%) followed by eclampsia 27.59% and infections 13.79. % [6,8]. In Guinea, Baldé reported 5.45% lethality among evacuated patients and causes of death were dominated by 50% hemorrhages followed by hypertension and its complications 33.3% as well as infection 16.67% [5].

Indirect causes of maternal death were represented by anemia, 5.9%.

This low mortality rate is due to the rapid care of our patients, the availability of emergency kits and caesarean section and the shortening of the time of care which is 29 minutes on average.

Sépou and collaborators found that the aggravating factors in the evacuated patients were: the low financial income, the stay of more than 5 hours in peripheral health facilities, the transport of patients by inappropriate vehicles and the holding of certain health facilities by the patients midwives and community health workers [19].

Our "relatively low" rate is not satisfactory because the WHO considers acceptable a lethality rate of less than 1%.

We recorded 83.2% of children alive and well. However, 16% of neonatal deaths were found. Thiam found 75.4% of children in good health and 18.8% of deaths [3].

In Benin, Tshabu Aguémon reported 15.40% of perinatal deaths [20].

This high mortality rate in our series could be explained by the absence of pediatricians and resuscitators during the study period, but also by the conditions of transport, the poor condition of the roads and the pathology of pregnancy such as HRP, dystocia (malformation) and eclampsia [21].

Conclusion

The results of our study allow us to affirm that it is possible to reduce the morbidity and mortality of patients evacuated in a context of scarcity of resources, thanks to a good management process. Senegal is a country concerned with equity in territorial access to health services, the concept of accessibility becomes a central issue in the system surrounding perinatal health policy.

To perpetuate these gains, you must:

- Promote and develop initial and continuing training for qualified providers
- Set up mutual health insurance for the period of pregnancy and childbirth
- Make medical ambulances available at stations more than 20 km distant
- Ensure free emergency obstetric and neonatal care, especially for this disadvantaged population

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