Incidence of postpartum gynaecological morbidities and their associated factors in a selected district in Sri Lanka

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Abstract

Introduction

The objective of this study was to assess the incidence of postpartum gynaecological morbidities and to describe their associated factors in a selected district in Sri Lanka.

Methodology

A sample of pregnant women (n-1050) was followed up by field investigators from 36 weeks of pregnancy to 42 days postpartum on a preplanned schedule. The morbid conditions were diagnosed using specific criteria developed for the study which included inquiries using a symptom checklist, clinical examination and laboratory investigations. Factors associated with these morbidities were studied using bivariate and multivariate analyses.

Results

The incidence of infection of LSCS scar was 13.7% (21) while infection of episiotomy was 2.2% (13). Gaping of episiotomy was found in 5.1% (30). In this study 19% (198) of mothers reported of perineal pain and 28 % (57) of these were not identified to have any specific morbidity. The incidence of urinary tract infection and genital tract infection was 2.3% (24) and 0.38% (4) respectively. Factors related to intrapartum care, place of delivery and health related personal behaviours showed significant association with the selected morbidities.

Conclusions

The study concluded that post partum gynaecological infection and their morbidities were found to be high and associated with factors that could be modified.

Key words

women's health; maternal health; postpartum morbidities; postpartum infections

Introduction

Maternal morbidity is an under-researched and neglected field (1). Recent studies (2,3,4,5) in the field of maternal and child health have shown that maternal morbidity during the postpartum period is extensive and under-recognized. Postpartum morbidities include a vast range of ill health conditions ranging from acute complications such as postpartum hemorrhage and high blood pressure to chronic conditions such as perineal pain and backache. It also includes postpartum sepsis, an important morbid condition which could lead to serious consequences. The postpartum infection can give rise to chronic disabling conditions such as chronic pelvic inflammatory disease, subfertility and serious illness like septicemia; it can also be fatal (6). Therefore, gynaecological morbidities which include not only postpartum infection but the other related morbidities are widely acknowledged as important conditions which could lead to long term squeale if not prevented or identified and treated early.

Irrespective of the extent of the problem, postpartum morbidities warrant consideration since they have an impact not only on the health of the mother but also on their families in many ways. It effects directly the physical and emotional well being of the newborn and may cause disruption of a woman's domestic and economic activities, disruption of marital relations and damage to psychological and emotional well being (7).

In the review article of postpartum maternal deaths, Li *et al* (8) stated that the majority of maternal deaths occurred during the postpartum period, both in developing countries (61%) and also in the United States (72%). This study further revealed that in developing countries 29.9% of post partum maternal deaths were due to infection while 1.3% were due to Caesarean section complications (8). The majority (61%) of maternal deaths in developing countries occur after delivery, 78% of them takes place during the first 24-48 hours, while a considerable portion is due to sepsis later (9). A community survey in India, in 1996, found that 16% of maternal deaths were due to postpartum infection (10).

In Sri Lanka over two thirds of maternal deaths occur during the postpartum period, with 42% taking place within 24 hours of delivery (5). Maternal mortality rate in Sri Lanka in the year 2003 was reported as 21 per 100 000 live births, while 8.5% of maternal deaths were due to sepsis (13). The needs assessment study (11) conducted in 16 districts in Sri Lanka in 1999, recognized post partum sepsis as the third commonest cause (5.6%) of major obstetric complications in hospitals in Sri Lanka.

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Provision of care by trained personnel during pregnancy and labour has shown a steady increase over the years in Sri Lanka (12).Currently almost 99% of pregnant women receive antenatal care and 94% of deliveries take place in hospitals (12). Home visits by Public Health Midwife (PHM) during antenatal period is 95% while home visits during postpartum visits showed a lower rate 65% (13). This reflects the lower degree of attention to postpartum care. Improvement in postpartum care would be an important contributory factor for further reduction of maternal and infant mortality and morbidity (13).

This study contributes the data on the incidence of postpartum gynaecological morbidity based on a large community based follow-up study done in urban and rural populations in the Ratnapura district in Sri Lanka in 2001.

Methodology

This was a community-based follow up of a cohort of pregnant women (n=1050) from 36 weeks of gestation up to 42 days post partum. The study was conducted in an urban and rural population in Ratnapura district in Sri Lanka during the year 2001-2002. A multi-stage stratified cluster sampling technique was used to identify the study population. The study population was selected from 35 clusters with 30 study units from each cluster. Clusters were distributed proportionately to the size of the population in the urban and rural areas of Ratnapura distinct.

Study instruments comprised interviewer administered questionnaires and checklists. The diagnosis of specific morbidities were determined by a physician using criteria developed for this study by a panel of experts that was based on clinical assessment and results of microbiological investigations as necessary.

Only women who resided within the study area during postpartum period and who had completed 36 weeks of pregnancy and planned to deliver in the study area were included into the study.

Mothers were educated on symptoms that needed their attention and requested to contact the field investigator (PHM) if they observed a symptom. The family members were instructed to inform the field investigator if the mother was admitted to a hospital for delivery. All the mothers were given an intrapartum card to be taken with them when they were admitted for delivery. This card was used as the questionnaire to obtain intrapartum information. This was filled by the trained health personnel in the hospital.

PHMs were selected as field investigators and were trained on the method for this study. Field investigators residing in or near to the clusters were selected, to enhance the accessibility throughout the study.

Each field investigator was allocated one cluster for follow-up visits as clusters were scattered all over the district. Follow up visits were initiated by the field investigator once the mother returned home after delivery. The mothers who stayed in hospitals for a longer period received follow up visits in the hospital.

Six follow up visits were done for each mother according to a predetermined schedule. Three visits during the first 10 days, the fourth visit between 12 and 14 day, the fifth visit on the 28th to 30th day and the last visit between the 40-42 day of postpartum. Information during these follow up visits were collected using the checklist of possible health problems expressed in lay terms. They were asked "Did you have any of the following health problems?". Referrals to a physician were made accordingly for the medical examinations. Laboratory investigations were performed if indicated as necessary by the diagnostic criteria of the study.

Physicians were selected and trained as clinical investigators in this study and they performed clinical examination and the collection of specimens when necessary.

Laboratory tests were performed to confirm the following morbidities. Urinary tract infections were diagnosed using the Leukocyte Esterase Regent Strip Test (urine dip test) which has a sensitivity of 86% and a specificity of 92% (14). High vaginal swabs were taken for culture for the diagnosis of genital tract infection. Swabs of wounds were taken for culture. All these tests were done for the mothers who had signs and symptoms of the identified morbidities. These specimens were collected and were sent according to standard guidelines to an identified laboratory for investigations.

Ethical clearance for the study was obtained from Ethical Review Committee of Faculty of Medicine, University of Colombo.

Analysis was done using the SPSS software package. Univariate, bivariate and multivariate analyses were performed to describe and determine associations between variables. The Z and the χ^2 were the statistical tests that were used in

bivariate analysis to describe the association between variables while a logistic regression model was used in multivariate analysis.

Results

The study included 1,041 pregnant mothers with a non-response rate of 0.8% (9). Non-respondents were not different to those who completed the study. A higher proportion of women 76.2% (794) had higher education, while 2.7% (27) had not received any school education. The majority 86.6% (903) of the study population were housewives.

Among the study population a majority 82.5% (860) of women had a normal vaginal delivery while 14.7 % (153) and 2.8% (29) had cesarean and forceps/vacuum extracted deliveries respectively. It was also observed that 17% (180) of women received antibiotics during their stay in hospital and the majority 73% (131) of these were women with a delivery by caesarean section.

Health related personal behavior during postpartum showed that 9.8% (102) of women did not have a bath during the first post partum week. Cloth napkins and disposable pads were used as sanitary towels. More than half, 62.2% (648) of the study population, exclusively used disposable pads. A majority of women (1021, 98.1%) changed the sanitary pads at least twice a day while a few (20, 1.9%) of the women changed it not more than once a day.

Perineal pain, infection of LSCS scar and gaping of episiotomy were among the common postpartum gynecological morbidities that were identified in this study (Table 1).

Infected episiotomy, gaping of episiotomy and perineal pain collectively accounted for 12.5% of morbid conditions.

In this study, a high proportion, 67.5% (581) of normal vaginal deliveries, were assisted with episiotomy. Significantly a higher proportions of episiotomies that were sutured by paramedical

Table 1- Incidence of gynecological morbidities during postpartum period.

Type	No	Incidence rate (%)
Wound infection	34	*n=734 4.6%
Infected LSCS scar	21	+n=153 13.7 %
Infected Episiotomies	13	n=581, 2.24 %
Gaping of episiotomy	30	n=581 5.16%
Genital tract infection	4	n=1041 0.38 %
Urinary tract Infection	24	n=1041 2.3%
Haematoma at the site of Episiotomy	6	n=581 1.04%
Painful perineum	198	n=1041 19.0%
Painful perineum not associated with specific mor bidity	57	n=1041 5.4%

*n=number of mothers with episiotomy +number of mothers experienced LSCS

Table 2- Factors with significant association with infection of episiotomy

Factors	Level of Significance
Decreasing level of education	χ^2 for trend 8,025 df=2, p<0.05
Decreasing frequency of bathing during 1st week	χ^2 for trend 4.45 df=2, p<0.05
Decreasing frequency of changing sanitary material during 1st week	χ^2 for trend 35.96 df=2, p<0.003
Increasing time gap of suturing of episiotomy	χ^2 for trend 9.79 df=2, p<0.05

personal (20.2%) had gaped compared to those that were sutured by medical officers (3.2%) (z= 3.4, p<0.05). Increasing time gap of more than one hour after delivery to suture the episiotomy showed a significant association with the presence of a gaping of episiotomy (z=3.47, p<0.05).

Table 2 describes the significant factors that are associated with infection of the episiotomy in univariate analysis.

Perineal pain was reported by 46.3% (32) of mothers and was significantly high among those in whom the episiotomy was sutured by a paramedical personnel when compared to those in whom the episiotomy was sutured by medical personnel (z=7.3, p<0.05).
Delay in suturing the episiotomy showed a significant association (χ^2=4.61, p<0.05) with occurrence of perineal pain.
Results showed that there is a great variation in the infection rate of LSCS wounds by institution where the LSCS surgery was done. Multivariate analysis revealed that LSCS carried out in hospitals in rural areas, had a three fold increased risk of getting infected compared to LSCS carried out in hospitals in urban areas (OR=3.3, p =0.033)

Although there were only four women diagnosed with genital tract infection, it is important to notice that of them two were identified with vaginal packs in situ at the time of diagnosis.
In this study, urinary tract infection and genital tract infection were considered together in the multivariate analysis in order to describe the common influencing factors as the number of genital tact infection was small for a separate analysis. Significant predictor variables that were identified in this model are presented in Table 3.

Table 3- Factors with significant association with genitor- urinary tract infection in multivariate analysis

Variable	P value	OR	95% CI	
			Upper	Lower
>5 vaginal examinations	0.039	2.54	1.045	6.123
Non-use of disposable sanitary pads exclusively	0.02	3.05	1.27	7.28
Changing sanitary pads once or less	0.001	11.63	2.50	54.10

Discussion

The low no response rate could be attributed to the inclusion criteria of enrolling women who planned to spend the postpartum period in the study area and also selecting females as field investigators (public health midwifes). Furthermore, selection of physicians as the research clinical investigators also contributed to enhance the quality of data. On the other hand, recruitment at 36 weeks of pregnancy meant that all mothers who had pre-term deliveries and abortions were excluded. Although this is a limitation, the numbers in these groups are small when compared to women who go to term. This compromise was made in the study design since recruitment into the study earlier in pregnancy may have caused logistic problems, cost more and possibly jeopardized the quality of data.
Morbidities to be included in this study, their definitions and diagnostic criteria were decided upon through consensus of a panel of experts from relevant fields. The diagnoses of specific morbid conditions were based on reports of symptoms as well as by enquiring about symptoms, followed by clinical examination and laboratory investigation where necessary. This gave more weight to the accuracy of the rates of the incidence of the specific morbid conditions. Repeatability of all study instruments was determined and validity of diagnostic procedures was assessed. The high intra-class correlation, 0.98, (95%CI (0.94-0.99)), that was observed, supports the high test-retest reliability of questionnaires. Scrutiny of completed questionnaires and random re-interviews by the principal investigator ensured a higher level of data quality.

Postpartum gynecological morbidities were found to be high among the study population.
In this study 3% women had urinary tact infection. In a review article of postpartum problems, in 1995, Glazener stated that incidence of urinary tract infection during postpartum period varies from 3%-8% (4). The rate of postpartum problems of present study is within this range. Similarly a study done in Karnataka in India showed that 2.4% of women urinary tract infection (7).

A high rate of wound infection (4.6%) was found in this study. Comparable findings were reported by Glazener *et al* in 1997 where the rate of wound infection was 2%-7% (1). The important feature of wound infection in this study was that infected LSCS scars were predominantly from the hospitals in rural areas. The standards of services provided varies to a great extent among the urban and rural hospitals in Sri Lanka which may be

attributed to the above mentioned observation.

Puerperal sepsis still accounts for significant postpartum maternal morbidity and mortality (6). In the same review article of postpartum morbidities, Glazener reported a wide range for incidence of puerperal sepsis (5%- 17%). In the present study the incidence of genital tract infection was found to be 0.38%. However detection of two women with vaginal packs in situ at the time of the diagnosis of genital tract infection shows the importance of complete vaginal examination at the time of discharge from the hospital. Previous studies on postpartum morbidity had identified perineal pain as one of the common health concerns of mothers during postpartum which supports the finding of the present study, where 19% (198) of women reported perineal pain (1,2,15).

However, the findings of the present study cannot be directly compared with the available local or international literature due to differences in study designs.

The increasing gap between episiotomy incision and suturing of it and being sutured by a paramedical staff showed a significant association with infection of the episiotomy, gaping and painful perineum which collectively accounted for 12.5% of morbidity in this study.
In Sri Lanka only physicians are allowed to suture episiotomies, as paramedical staff are not trained to do so. The directive of the Ministry of Health in Sri Lanka is to suture the episiotomy within an hour of delivery. The delay in suturing of the episiotomies as found in this study reflects the non adherence to the state directives. This implies the importance of the regular monitoring of practices related to suturing of episiotomies.

In the present study bathing practices during the postpartum period, type and the frequency of changing sanitary pads showed a significant associations with infection of the episiotomy and also with genitourinary tract infection. This highlights the importance of addressing the personal health behaviour during postpartum through health education during pregnancy.

Limitations

The results of the study were also subject to some limitations. Although the strip test was used to diagnose the urinary tract infection, the culture method would have been a better option but was not feasible in community research. Further the strip test was done only in women who complained of urinary symptoms; women with asymptomatic bacteriaemia could not be detected. This could have affected the estimations. Limiting the culture of vaginal swabs only for aerobic organisms also may have contributed to the lower rate of the incidence of genital tract infection.

In this study 2.2% of women had an infected episiotomy and 5.2% had gaping of episiotomy. Episiotomies where gaping was detected may have progressed into infection if it was not detected early. Multivariate analysis could not be performed in identifying the predictors of infection of episiotomy due to the sample size which could have given adjusted association with predictor variables for infected episiotomy.

Conclusions

Gynaecological infection and related morbidities during postpartum were found to be common. Strict adherence to the policies and procedures related to intrapartum services and to addressing personal health behaviour during postpartum through health education programs are needed to reduce postpartum gynaecological morbidity.

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References

1. Glazener CMA, Abdulla M, Stroud P, Naji S, Templeton A, Russel IT. Postnatal maternal morbidity: Extent, causes, prevention and treatment. British journal of Obstetric and Gynecology 1997;102: 282-287.
2. Stephanie B, Judith L. Maternal health after child birth: results of an Australian population based survey. British Journal of Obstetric and Gynecology 1998;105: 156-161.
3. De Silva, IW. Puerperal morbidity: a neglected area of maternal health in Sri Lanka. Social Biology 1998; 45: 223-245.
4. Glazener CMA. Review postpartum problems. British Journal of Hospital Medicine 1995;58: 313-318.
5. Banduthilaka THC. Epidemiology of maternal mortality in Sri Lanka: A Thesis of University Of Colombo. Colombo: Sri Lanka 1996.
6. Neville FH, George JM. Essentials of Obstetrics and Gynecology: 3rd edition. W B Saunders Company,1986.
7. Datta, Sharma K, Razack RS, Ghosh TK, ,Arora R .Morbidity pattern among rural

women in Alwar, Rajesthan : A cohort study. Health care population perspective issues 1980 ; 3: 282-292.
8. Li XF, Fortney JA, Kotelchuck M, Glover LH. The postpartum period: the Key to maternal mortality. International journal of Gynecology & Obstetrics 1996; 54: 1-10.
9. Carla A. Measuring maternal mortality: What do we need to know. In Marge B, Sundari TK. Reproductive health matters-safe motherhood initiatives critical issues. Black well Science, 1999; 16-19.
10. Bhatia JC, Cleland J. Obstetric morbidity in South India: results from a community survey. Social science and medicine 1996; 43; 1507-1516.
11. Family Health Bureau Sri Lanka, United Nation Children's Fund. Needs assessment study: Women's right to life and health project. Sri Lanka: Family Health Bureau, United Nation Children's Fund 2000
12. Ministry Of Health. Annual Health Bulletin. Colombo:The Ministry of Health Sri Lanka. 1999.
13. Ministry Of Health. Family health report. Colombo: Evaluation unit, Family Health Bureau, Ministry of Health Sri Lanka, 2001.
14. Rodney K, Kusumi, Penelope J, Gover, Clvinm, Kumin D. Rapid detection of pyuria by leucocyte esterase activity. JAMA 1981; 24: 245-256.
15. Calvert S, Fleming V. Minimizing postpartum pain: a view of research pertaining to perinatal care in child bearing women. Journal of advanced nursing, 2000; 32 (2): 407-415.