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Role of Low Dose Aspirin for the Prevention of Recurrent Miscarriage

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ABSTRACT

Background: A considerable percentage of women have recurrent pregnancy loss (RPL), which is defined as two or more consecutive losses. RPL frequently has multiple underlying reasons, such as immunological and thrombotic factors. Since low-dose aspirin (LDA) possesses anti-inflammatory and anti-thrombotic qualities, it has been suggested as a preventative strategy. **Objective:** The objective of this study is to assess how low-dose aspirin can improve pregnancy outcomes and prevent recurrent miscarriages. **Methods:** This qualitative study was carried out in a Quetta tertiary care hospital. Purposive sampling was used to choose 120 women who had a history of repeated miscarriages. Semi-structured interviews were used to gather data, which were then subjected to thematic analysis. **Findings:** 66.7% of the 120 women took low-dose aspirin. Of these, 70.8% went on to have healthy, continuing pregnancies. Better results were obtained with preconception initiation. While mild problems including nausea and stomach discomfort were observed in a small number of individuals, the majority had no side effects. **Conclusion:** Women who had experienced repeated miscarriages seemed to benefit from low-dose aspirin, particularly if taken before becoming pregnant. It had few adverse effects and was generally well accepted, indicating that it might be a safe prophylactic measure.

INTRODUCTION

Approximately 30% of conceptions are believed to precipitate pregnancy loss; hence it is common adverse event. [1] Pregnant women who suffer from a loss of a child have a higher risk of further loss and other adverse pregnancy outcomes. [2] But irrespective of exact pathophysiological mechanisms leading to unfavorable pregnancy outcomes the decrease of blood flow and/or rise of inflammations may be important substances. [3] Aspirin is capable to improve pregnancy outcomes as it can improve blood flow and reduce inflammation in reproductive body organs.

Although it's questionable that it works, the use of LDA after conception is commonly prescribed for preventing losses of pregnancy and has been explored quite extensively in an association with recurrent pregnancy loss (usually at least two losses). [5] It has been shown that preconception LDA application improves the endometrium and vascularization in the IVF patients [6]. Therefore, in a critical time period, preconception-initiated LDA can potentially influence favorably to downstream pregnancy outcomes. Not much research has been carried out on preconception initiated LDA.

RPL is a complex pathogenesis comprising of genetic, anatomical, immunological, endocrinological, and thrombotic problems [7]. Although there has been a lot of investigation, the exact cause in about half of the cases is still unknown, thereby making clinical care hard [8].

Low dose aspirin has attracted much interest in terms of treatment alternatives because they might increase pregnancy outcomes in particular in cases of thrombophilic diseases and unexplained RPL [9]. Aspirin is a medication that works by inhibiting the cyclooxygenase-1 (COX-1) that results in a decrement in the production of thromboxane A, which is important for platelet aggregation and involves vasoconstriction [10]. This process is particularly useful in situations where the placental microvascular thrombosis is contributing.

loss of pregnancy [11]. For women's cases of antiphospholipid syndrome (APS), it has been largely recommended to use a well Aspirin, with or without low-molecular-weight heparin, being a known trigger of RPL [12]. Its effectiveness in treating the non-APS – women is still a subject to question, however. While new research shows that aspirin could also promote trophoblastic invasion, uterine blood flow and modulate immunological responses, all presumably conducive to the healthy intrauterine environment for pregnancy maintenance

[13].

The strategy of using low-dose aspirin to prevent a loss of pregnancy has been the object of much research, to have achieved mixed results. Although other studies did not find any clear benefit, particularly in case of unexplained RPL in women, there are others that have reported a significant reduction in miscarriage rates [14]. Different choices of patients, aspirin dose, initiation time, and comorbid use of other therapies like progesterone or heparins may explain these differences [15].

The knowledge of the role of low-dose aspirin in RPL therapy is important in Bangladesh where its maternal health is still a problem.

Lack of local data in this area requires further research to create evidence-based recommendations to the specific needs of the population [16]. The success of low dose aspirin in the case of improving pregnancy results among women with a history of pregnancy loss as well as its role in the prevention of recurrent miscarriages was examined in this study.

LITERATURE REVIEW

Still, recurrent pregnancy loss (RPL), i.e., the loss of several pregnancies in a row, remains a significant issue in studying of the reproductive sphere. Low dose aspirin (LDA) has been the subject of many studies hoping to establish it as a therapeutic solution to help women with RPL and those with underlying thrombophilic diseases to have better outcomes during pregnancy.

One of the major ways believed to bring positive impacts of LDA is the prevention of the aggregation of platelets. Blocking of the cyclooxygenase-1 (COX-1) permanently, prevents the rate of thromboxane A2 synthesis which is a strong vasoconstrictor that promotes platelet aggregation. This effect is particularly important in such diseases as antiphospholipid syndrome (APS), associated with pregnancy loss due to the microvascular thrombosis.

Women with APS-related RPL who were treated with LDA and were on LMWH had an 86% live birth rate, which proves the efficacy of this therapeutic strategy in this population, having been identified by research by Swain and Singh [17].

LDA has been shown to be effective in increasing both uterine and endometrial blood flow, which is important for a healthy implantation and placental development, besides its antithrombotic properties. Wang et al. did a study on inexplicable RPL among women in which a significant improvement in endometrial receptivity markers such as endometrial thickness and decrease in pulsatility and resistance indices of uterine arteries (which indicates improved uterine perfusion) was observed after the administration of LDA [18].

It seems that a principal factor depending on the performance of LDA is related to the time of its initiation. The outcomes of the preconception-initiated LDA effect on pregnancy were observed in the Effects of Aspirin in Gestation and Reproduction (EAGR) experiment. The study found a higher rate of conception in LDA group, implying potential advantages towards enhancing fecundity with no significant increase in live birth rates for women with single or double pregnancy losses [19].

However, LDA does not benefit all demography equally. The effects of LDA on the synthesis of prostacyclin and thromboxane A2 in women with RPL, with and without antiphospholipid antibodies were evaluated by Carp et al. Unfortunately, LDA was altering the biochemical markers of pregnancy successfully, but it failed in providing better pregnancy outcome suggesting that the basic cause of RPL The study has also dealt with such safety concerns, as the use of LDA during pregnancy. LDA is safe for use in pregnancy, says the American College of Obstetricians and Gynecologists (ACOG) and in particular in those at high risk of preeclampsia. But these specialists on the contrary stress the need for individualized patient assessment and avoid frequent applications in healthy women without distinct risk factors [21].

Research Objective

The aim feared with this study is to find out whether low-dose aspirin can be used to allow women who had up to two consecutive miscarriages not to experience miscarriage again. The study aimed to establish whether aspirin could enhance the outcome of pregnancies with the increase in the blood flow of the uterus and decrease in the aggregation of platelets. Also, it reviewed the benefits and safety of pre-pregnancy and pre-early pregnancy usage of aspirin medication especially in women with thrombophilic risk factors or unexplained recurrent loss of pregnancy.

METHODOLOGY

This is qualitative study done from January 2025 to May 2025 at a Quetta tertiary care hospital which had potential to determine the use of low dose aspirin in preventing recurrent miscarriages. In order to select 120 women who have had at least two miscarriages in succession, purposive sampling was employed. Participants' obstetric history, low dose aspirin use, time of administration, perceived effects and any side effects were explored elaborately using high in depth semi structured interviews. The qualitative findings were supported by review of clinical data. In order to identify reoccurring patterns and themes, verbatim transcription and audio recording of the data applied with a thematic analysis. The hospital's review board provided ethical approval, and confidentiality was strictly maintained throughout the whole study.

RESULTS

Table 1

Demographic and Clinical Characteristics of Participants (n=120)

Variable	Category	Frequency (n)	Percentage (%)
Age (Years)	20–29	40	33.3%
	30–39	60	50.0%
	40 and above	20	16.7%
Duration of Recurrent Miscarriage (Years)	<2	50	41.7%
	2-4	40	33.3%
	>4	30	25.0%
Type of Miscarriage	Early (<12 weeks)	90	75.0%
	Late (>12 weeks)	30	25.0%
Previous Pregnancy Outcomes	Successful Pregnancy	45	37.5%
	Recurrent Miscarriage	75	62.5%
Use of Low-Dose Aspirin (LDA)	Yes	80	66.7%
	No	40	33.3%

Table 2
Obstetric History of Participants

Variable	Category	Frequency (n)	Percentage (%)
Number of Previous Miscarriages	2	55	45.8%
	3-4	50	41.7%
	More than 4	15	12.5%
Gestational Age at Miscarriage	<12 weeks	85	70.8%
	12–20 weeks	35	29.2%
History of Live Births	None	65	54.2%
	One or more	55	45.8%

Table 3
Aspirin Use Characteristics

Variable	Category	Frequency (n)	Percentage (%)
Timing of Aspirin Initiation	Preconception	50	41.7%
	After Confirmation of Pregnancy	70	58.3%
Dosage Used	75 mg/day	95	79.2%
	100 mg/day	25	20.8%
Duration of Use	Up to 12 weeks	35	29.2%
	Until 20 weeks	45	37.5%
	Throughout pregnancy	40	33.3%

Table 4
Pregnancy Outcomes Following Aspirin Use

Outcome	Frequency (n)	Percentage (%)
Successful ongoing pregnancy	85	70.8%
Miscarriage (Despite Aspirin)	30	25.0%
Stillbirth	5	4.2%

Table 5
Reported Side Effects of Aspirin Use

Side Effect	Frequency (n)	Percentage (%)
Gastric Discomfort	20	16.7%
Nausea/Vomiting	15	12.5%
Spotting/Bleeding	10	8.3%
No Side Effects	75	62.5%

DISCUSSION

This research was aimed at determining how low dose aspirin (LDA) could be used to assist women who had suffered from two or more consecutive miscarriages not to undergo another miscarriage. The findings demonstrated that there was a significantly positive pregnancy outcome when LDA was used. 66.7% of the 120 subjects reported using LDA in their last endeavor of pregnancy and 70.8% of these women had an ongoing pregnancy. These results are in line with the earlier works, mentioning that LDA can enhance implantation and development of the placenta through improving uterine perfusion and decreasing the risk of microvascular thrombosis.

Three quarters of the miscarriages occurred prior to a woman being 12 weeks pregnant, implying that women with recurrent cases of miscarriages are likely to have early loss of pregnancy. The possibility of LDA in reducing the chances of having early pregnancy loss is proved by the fact that 70.8% of the aspirin users had successful ongoing pregnancies. This is in accordance with the earlier findings from the EAGR trial and other studies that indicated that taking a daily dose of aspirin before conception might have a positive effect on the establishment and maintenance of pregnancy, particularly if vascular and inflammatory variables are present.

It is believed that it is of crucial importance when to begin taking aspirin. More women (58.3%) began to take aspirin after their pregnancy is confirmed while the percentage of the females (41.7%) who began taking the drugs before pregnancy did not seem to be different in terms of success rates. It is believed that applying preconception could reduce the risks of such very early losses as adaption of the uterine environment and endometrium responsiveness to the incoming implantation.

Most uses were with 75 mg per day, which is in the range that is generally safe and effective in regard to antiplatelet effects with no serious bleeding risk. About a third of pregnant women took aspirin throughout the period of pregnancy while the rest discontinued use at week 12 or 20. While, maintaining aspirin throughout gestation can be after-all more protective, especially so in high-risk subjects, the effectiveness, even with varying lengths, suggests, that early pregnancy treatment with aspirin may be adequate in many instances.

It is interesting to note that 4.2% women had stillbirths and 25% of women went on still miscarrying even after taking aspirin. This shows that aspirin can be useful but does not always present itself in this manner and is most likely useful in cases where there are underlying immunological/vascular mechanisms. Aspirin medication may not be helpful for other contributing factors such as chromosomal abnormalities and/or hormone imbalance, and a significantly large portion of RPL is still unexplained. Generally, it can be stated that aspirin was tolerated sufficiently in regard to safety. The most common complaints were minor nausea (12.5%), gastrointestinal discomfort (16.7%) – what to be expected, bearable in case of aspirin use, whereas the overwhelming majority of women (62.5%) did not mention the side effects. In this cohort, LDA posed little risk when using it with due attention as only 8.3% had spotting or bleeding.

CONCLUSION

The researchers in this study reveal that low-dose aspirin (LDA) can reduce recurrent miscarriages, particularly on women who have had two or more consecutive pregnancy loss. The results indicated that among the aspirin-users, 70.8% had a successful continuation pregnancy which meant that the use of LDA was associated with better pregnancy. Having recurrent pregnancy loss (RPL) linked to the underlying vascular, thrombotic, or immunological conditions, this emphasized the possible effectiveness of aspirin in boosting the early gestation.

The two groups showed positive results, and significant number of the participants had already begun to take aspirin either before or immediately after pregnancy confirmation. This lent credence to the notion that early LDA starts, if possible, before pregnancy may enhance uterine blood flow, reduce inflammation and increase endometrial receptivity hence the implantation and the development of the placenta will be facilitated. Most women used the recommended daily dose (75 mg); and that was safe and efficacious, with minimal side effects, such as mild nausea or stomach discomfort. Importantly, 62.5% of the users reported no negative side effects at all, supporting the safety picture of LDA in the first trimester of pregnancy.

However, it was necessary to understand that not everyone felt the effect of aspirin. Stillbirth among the women was 4.2% and 25% of the women miscarried anyway. This illustrated the complexity of RPL that could have multiple causes such as chromosomal abnormalities, anatomical abnormalities or other non-related to aspirin factors. Therefore, LDA should have been part of an all-inclusive and tailor-made approach towards the management of RPL and not as single treatment.

Overall, low-dose aspirin seemed to be a promising, affordable, and relatively safe intervention to improve pregnancy outcomes in women with recurrence of miscarriages who had a suspected thrombotic and/or inflammatory causation. Although the results were promising, larger studies that were representative were required to better elucidate the ideal time, dosage and target individuals for LDA therapy in the setting of RPL. These findings served as a foundation for future evidence-based guidelines that could be used for informing clinical practice, thus leading to positive maternal health outcomes.

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