DIASTASIS RECTI ABDOMINIS AND ITS ASSOCIATED RISK FACTORS IN POSTPARTUM WOMEN

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ABSTRACT

Objective: To determine the frequency of diastasis recti abdominis and its associated risk factors in postpartum women.

Study Design: Cross-sectional study.

Place and Duration of Study: Omar Medical Center Lahore, Yaseen Medical Center Lahore and Social Security Hospital Lahore, from Sep 2019 to Dec 2019.

Methodology: This study included 128 participants fulfilling the eligibility criteria. The assessment of diastasis recti abdominis was done manually by a female physiotherapist using single finger, double finger and three finger methods on abdomen at three levels: at the umbilicus, 4.5 cm below and above the umbilicus.

Results: The frequency of diastasis recti abdominis out of 128 participants was 97 (75.8%). Out of 128 participants about 38 (29.7%) were primigravida and 90 (70.3%) multigravida. Statistical significance (p=0.015) was found between presence of diastasis recti abdominis and number of pregnancies (gravidity). No association was present between diastasis recti abdominis and delivery method (p=0.09). The p-value (0.56) showed no significant association of diastasis recti abdominis with pelvis floor dysfunction and urinary incontinence.

Conclusion: The findings of this study concluded high frequency of diastasis recti abdominis in postpartum women. As the number of pregnancies increased, it decreased the integrity of linea alba and caused the separation of rectus abdominis muscle.

Keywords: Antenatal, Diastasis Recti, Diastasis Recti Abdominis, Postnatal, Pregnancy, Postpartum.

INTRODUCTION

Diastasis Recti Abdominis, abbreviated as DRA, is the partial or complete separation of the rectus abdominis muscle (the six-pack muscle) at central line connective tissue called the linea alba[1]. It results in the extension of the linea alba tissue and may lead to abdominal pain or discomfort that may worsen with movement[2], bulging of the abdominal wall (herniation)[3], pelvic floor dysfunction, lower trunk muscle rotation torque[4], lumbopelvic pain[5], urogynecological symptoms such as pelvic organ prolapse, fecal incontinence and urinary incontinence[6], Women are more prone to DRA during pregnancy, postmenopausal women and postpartum women. However, it can also occur in men due to vigorous abdominal exercises without proper guidance[7,8]. During pregnancy "Relaxin" is released which causes the pregnant women's bodies to compensate physiological changes due to the growing uterus which is increases pressure on the abdominal wall. As pregnancy progress, the abdominal muscles are stretched and shifted away from the line aalba and may results in DRA[1].

A very large DRA affects the functions involving the abdominal muscles such as respiration, delivery of a fetus, posture, trunk stabilization, and trunk movements. Any damage or disturbance of the abdominal wall muscles or of the rectus addominis muscle or linea alba can strongly compromise these activities[9].

It has been stated that weak or damaged abdominal muscles as in DRA lead to imbalance between the co-contraction of abdominal muscles with pelvic floor muscles (PFM) and the less effective PFM contraction will therefore cause

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urinary incontinence[10]. In 2019, the prevalence of DRA during prenatal and posnatal period in Tigray, Ethiopia was 43.9%. Another study done in Rawalpindi, Pakistan found that out of 100 females, 64 had DRA. Women with multiple pregnancies are more prone to diastasis recti and its incidence increases as the pregnancy progresses[9].

The awareness and rehabilitation of diastasis recti abdominis is quite important among health professionals. If it remains untreated it can cause herniation, incontinence, pelvic floor muscle weakness, lower back pain or there may be a complication in next pregnancy risking the life of fetus. The knowledge available on DRA, its risk factors and complications is scant. Therefore, this study was conceived to determine the frequency of diastasis recti abdominis in postpartum women and its association with gravidity and urinary incontinence.

METHODOLOGY

This cross sectional study was conducted in different hospitals of Lahore including Omar Medical Centre, Yaseen Medical Centre and Social security hospital. Sample size of 128 participants was calculated by using online epitool (by using estimated true proportion=0.1345[11], desired precision=0.05 and confidence interval=0.90). The participants fulfilling the eligibility criteria were included in this study. The inclusion criteria consisted of 6 to 8 weeks postpartum women more than >40 years old. Exclusion criteria was uterine prolapse with stage III or IV, any abdominal surgery other than C-section, body mass index greater than 30, pathological connective tissue laxity and abdominal hernia. Diastasis recti abdominis was examined manually by a physiotherapist using finger method with one, two and three fingers in each participant's abdomen at midline. Two readings were taken by a female physiotherapist at three levels; at the level of umbilicus, 4.5 cm below and above the umbilicus. The topic and aim of the study were made cleared to all participants and a copy was attached to the self-administered questionnaire to elaborate the importance of this study. Approval of the higher authorities of each respective hospital for study was taken before the initiation of data collection and survey. Data was analyzed by using SPSS version 21. The quantitative data was presented in the form of mean ± SD and histogram. While for the qualitative data frequency and percentage were calculated. Chi square test was applied to find out the association of diastasis recti abdominis with urinary incontinence, gravidity, and delivery method. The level of significance was 0.05.

RESULTS

The mean age of participants was 27.45±4.02 years. The minimum and maximum ages were 21 years and 37 years respectively. The frequency of diastasis recti abdominis out of 128 participants

Table-I: Demographic data of participants.

Variables	n (%)
Age (years)	
Mean ± SD	27.45 ± 4.02
Minimum	21
Maximum	37
Number of Pregnancies (Gravidity)	
One	38 (29.7%)
Two	69 (53.9%)
Three	14 (10.9%)
Four or more	7 (5.5%)
Occupation	
Housewife	86 (67.2%)
Job Worker	42 (32.8%)
Diastasis Recti Abdominals	
Yes	97 (75.8%)
No	31 (24.2%)

Table-II: Association of diastasis recti abdominis with other associated factors.

Variables	Diastasis Recti Abdominals n(%)		*p*-value
	Yes (97)	No (31)	
Number of Pregnancies			
One	32 (33%)	6 (19.4%)	0.015
Two	45 (46.4%)	24 (77.4%)	
Three	14 (14.4%)	-	
Four	6 (6.2%)	1 (3.2%)	
Type of Delivery Method			
Normal Vaginal Delivery	40 (41.2%)	8 (25.8%)	0.90
Cesarean section	57 (58.8%)	23 (74.2%)	
Pelvic Floor Dysfunction / Urinary Inconinence			
Yes	29 (29.9%)	11 (35.5%)	0.56
No	68 (70.1%)	20 (64.5%)	

was 97 (75.8%) (table-I). Out of 128 participants about 38 (29.7%) were primigravida and 90 (70.3%) multigravida G2=69 (53.9%), G3=14 (10.9%) and G4=7 (5.5%) (table-I). A significance (p=0.015) was found between the presence of diastasis recti abdominis and number of pregnancies (gravidity). About 48 (37.5%) underwent normal vaginal delivery (NVD) while 80 (62.5%) had cesarean delivery. No association was present between DRA and delivery method (p=0.09). The pelvis floor dysfunction and urinary incontinence were found in only 40 participants; out of whom 29 had DRA. The p-value (0.56) showed no significant association of DRA with pelvis floor dysfunction and urinary incontinence (table-II).

DISCUSSION

The results of this study showed a high frequency of diastasis recti abdominis in post-partum women. Diastasis recti abdominis was found associated with number of pregnancies (gravidity). No significant association of DRA was found with type of delivery method and urinary incontinence. The results suggested that as the number of pregnancies increase, it results in decreased integrity of linea alba and causes the separation of rectus abdominis muscle (CDRA).

DRA is quite common during pregnancy at gestational week 35 with 100% prevalence. In postpartumly state it may continue 6 weeks with a prevalence of 50% to 60%[12]. Other predisposing factors include obesity, multiple pregnancies, large baby birth, excessive uterine fluid, and a lax abdominal wall from former pregnancies[13]. There are many factors leading to DRA, such as the, multiparity, aging, cesarean section, obesity, multiple pregnancy, fetal macrosomia, high birth weight, ethnicity, polyhydramnios, and childcare responsibilities[12,13].

In 2019, the prevalence of diastasis recti abdominis during prenatal and posnatal period in Tigray, Ethiopia was 43.9%[13]. Another study done in Rawalpindi, Pakistan had found that out of 100 females, 64 had DRA[9]. Spitznagle *et al*[14] showed that two hundred and eighty-one of the 541 patients (52%) presented with DRA. These previous studies found the freq-uency of DRA to be very high in prenatal and postnatal periods. Same conclusions were found in our study which showed a high frequency of DRA in postpartum women.

No significant association of DRA was found with type of delivery method and urinary incontinence. Same findings were found in a study[10] which had concluded that diastasis recti abdominis is not a risk factor of pelvic floor dysfunction or urinary incontinence. In other studies[15,16] no association was found between diastasis recti abdominis and urinary incontinence. Similarly, a systematic review including twelve studies (involving 2242 participants) showed no significant association between the presence of DRA and urinary incontinence. Contrary to the findings of present study, a study[14] stated a relationship between the presence of DRA and the support-related pelvic floor. In another study[16], DRA incidence was significantly greater in those who had C-section than in those who underwent normal vaginal delivery. Whereas in this study no link was present between delivery method and DRA and same finding was found by Gitta *et al*[17].

The chances of incidence of diastasis recti abdominis increased with increasing number of pregnancies (gravidity). This finding was proven by the results of this study and previous studies[9,18] had also proven it. While a study[17] had opposite these findings and found no difference in number of pregnancies and DRA.

Diastasis recti abdominis can be treated conservatively or surgically. Surgery which is abdominoplasty is recommended in severe cases while mainly it is managed conservatively. Conservative management includes different exercises such as core stability exercise, pelvic floor exercises[19,20], electrical stimulations[21] and precautions to minimize stress on the muscle[22].

In this study the diastasis recti abdominis was checked manually by the physiotherapist. More accurate information can be obtained by latest technology diagnostic tools available to found the presence of DRA. Studies with a larger

sample size should be done to obtain more reliable results. The knowledge available on DRA is scant. Therefore, further studies are needed on the prevalence of diastasis recti abdominis, incidence, risk factors and the importance of preventative programs and its management.

CONCLUSION

High frequency of diastasis recti abdominis is found in 6 to 8 weeks postpartum women. DRA was found associated with gravida while no association of DRA was found with urinary incontinence and the type of delivery method.

CONFLICT OF INTEREST

This study has no conflict of interest to be declared by any author.

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