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Risk Factors for Acquired Labial Agglutination in Infancy in Coastal Region of Karaikal

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Abstract:
Objective: *To assess the risk factors for acquired labial agglutination in infancy.*
Methods: *Newborn female babies with normal labia minora enrolled between Feb 2014 and Jan 2015 were followed till 18 months of age. Pre designed questionnaire was used at each visit to register details on breastfeeding, diaper use, frequency of diaper change, perineum cleaning methods including use of tissue wipes, use of talcum powder, creams in the vulva, positioning of older infants during micturition, wetness of the vulva between voiding, frequency and consistency of stools and medications used. Vulval examination at each visit was recorded. Presence of labial agglutination at any time and a normal labia minora at 18 months of age were regarded as endpoint*
Results: *Among 178 female newborns who were followed into 18 months of age, 46(25.8%) developed labial agglutination. Mean age of labial agglutination was 13±2months. Diaper use for prolonged hours(>10 hours/day), infrequent change of diapers (< 1 time /6hours),lack of breastfeeding in the preceding 6 months of occurrence of labial agglutination showed significant association. Use of wipes and talcum powder were not significant risk factors for labial agglutination. A total of 3infants with labial adhesion (6.5%) and 11(8.3%) with normal labia developed symptomatic culture proven urinary tract infection in the study period. None of the infants had ultrasound detected structural abnormalities of genitourinary tract.*
Conclusion: *Prolonged use of diapers, infrequent changing of diapers and lack of breastfeeding were significantly associated with development of labial agglutination in infants.*
Keywords: *breastfeeding, diaper, labial agglutination*

I. Introduction

Labial agglutination in pediatric population is commonly encountered due to low estrogen states in prepubertal girls [1]. Various terminologies are used to denote this condition –labial adhesion, labial agglutination, labial fusion, labial synechiae, vulvar adhesion, vulvar synechiae, gynatresia. Etiology of labial agglutination is varied, congenital or acquired. Lack of estrogen and vulvovaginitis due to infections or irritation are the common causes of acquired labial agglutination [2,3]. Sexual abuse is one of the neglected cause for this condition in older children [4,5].Most of them are asymptomatic and picked up during routine clinical examination. Common symptoms attributable to labial adhesion include voiding dysfunction, dysuria, local irritation, pain, pooling of urine and post void urinary dribbling. Urinary tract infections [6] and urinary tract obstruction[7] are less common but serious complications of labial agglutination. Thickness of adhesion varies from superficial to full thickness adhesion. Treatment includes topical estrogen and betamethasone applications and in resistant cases surgical adhesionolysis [8].

II. Materials and methods

All newborn female babies attending the well-baby and immunization clinics between Feb 2014 and Jan 2015 were enrolled. Those with normal female external genitalia without congenital labial adhesion were included and followed during well baby visits till 18months of age when they present for first booster of DPT/OPV vaccination. Predesigned, structured, pretested questionnaire was filled up by the same two trained postgraduate students at every visit of enrolled babies. Data on breast feeding, use of diapers either cloth or disposible, frequency of diaper change, cleaning practices followed like the use of tissue wipes wet/dry, cotton, cloth were recorded. Questions on passage of worms in stools, deworming medication given, nocturnal crying of infant and perianal itching during night time were noted. Pattern of urination and stool were also enquired at every visit. Sensitive enquiry on infant abuse was also made after gaining confidence of the attendant. Local application of talcum powder, oils, creams in the perineum and vulva were noted. Drug intake by the mother, baby or both were recorded and hormonal content of the drug if any were given additional importance. Examination included general examination, examination of all systems, anthropometry, examination of vulva for hygiene, the presence of dermatitis, infection, labial agglutination, wetness in the labial folds, discharge in the labial folds. Urine complete examination and bacterial culture of clean catch urine was done in all babies

with labial agglutination and those with febrile episodes irrespective of the presence or absence of labial adhesion. All enrolled babies underwent screening ultrasound of kidney urinary bladder, uterus and adnexa at the time of discharge from the study. Presence of labial agglutination at any point of time and normal labia minora at 18 months of age were regarded as endpoint. Statistical analysis of data using SPSS software 16.

III. Results

A total of 184 female newborn were recruited during the study period, 178 could be followed upto 18 months of age. Among them, 46(25.8%) acquired labial agglutination(Figure 1). The minimum age of labial agglutination was 3 months and maximum age was 18 months. Average age of labial agglutination was 13±2months. Out of the 46 babies with labial agglutination, there was prolonged use of disposable diaper >10 hours/day either continuously or with intermittent diaper free intervals in 38 babies (82.6%) compared to 59 babies (44.6%) without labial adhesion at 18 months of age, which was statistically significant ($p<0.05$). Infrequent change of disposable diapers (<1 time in 6 hours) was practiced in 44 babies (95.56%) in labial adhesion group and 60 (45.45%) in normal babies without vulvar synechiae ($p<0.05$). There was complete discontinuation of breastfeeding with switching over to other feeds in the preceding six months in 29(63.04%) babies who developed labial agglutination. Among 132 babies who were free of labial adhesion, there was complete cessation of breastfeeding only in 11 babies (8.33%).

This was significant statistically ($p<0.05\%$). (Figure 2). But partial breastfeeding in babies who developed vulvar adhesion 12 (26.08%) was not statistically significant from those with normal labia 31(23.48%) p=0.8. Use of tissue wipes either dry or wet in those with labial adhesion was 27 (58.69%) and 73(55.3%) in those with normal labia, which was insignificant p=0.1. Use of topical application of non-medicated oils, creams and talcum powder was not statistically different in both the groups (32 in those with vulvar adhesion and 65 in those with normal labia p=0.5).There were no history and clinical symptomatology attributable to worm infestation in either group. None of the newborn with labial adhesion was symptomatic at the time of diagnosis. Wetness of vulva was noticed equally in both the groups (7 in those with labial agglutination and 18 in those without labial adhesion- p=0.1). A total of 3 infants with labial adhesion (6.5%) and 11 with normal labia (8.3%) developed symptomatic culture proven urinary tract infection during the study period and recovered completely with treatment. Screening ultrasound of kidneys, urinary tract, uterus and adnexa, was normal in all the babies irrespective of the presence or absence of labial fusion.

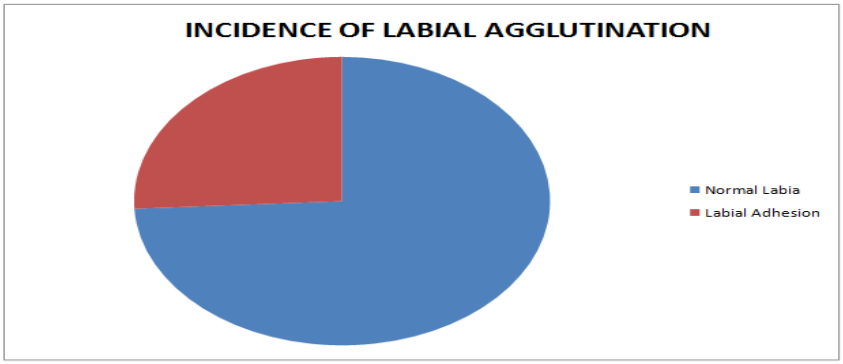

Figure 1: shows the incidence of labial agglutination in the study population

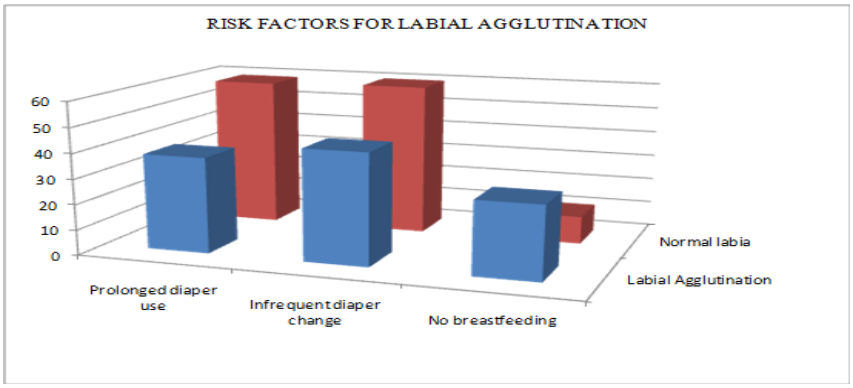

Figure 2: Significant risk factors for labial agglutination

IV. Conclusion

Labial adhesions (synechia vulvae) are a relatively common disorder of the external genitalia in prepubertal girls. The incidence of labial synechiae is 1.8% reported by Leung et al in a pediatric outpatient clinic [9]. There is no racial predilection. Congenital labial adhesion due to 21hydroxylase deficiency has been reported [10]. Acquired lesions usually occur between 3 months and 6 years of age, with a peak between 13 and 23 months of life [11]. Chronic inflammation denudes the layers of epithelium and the raw areas fuse to form adhesion. Chronic vulvovaginitis, nocturnal enuresis, usage of napkins, lichen sclerosis, pemphigoid lesions, genital herpes, diabetes mellitus, caustic vaginitis and fresh perineal tears are some of the conditions associated with synechiae [12]. In the majority of cases, labial adhesions are asymptomatic and noticed by the parents or a physician during a routine physical examination.

The adhesion can be flimsy or dense and usually start from the posterior fourchette and advance towards clitoris [13]. The fusion can be partial or complete. Prolonged diaper use and infrequent change of diaper are often associated with irritation due to urine or stool collected in it. This can cause continuous low grade inflammation of the vulva predisposing the child to labial agglutination. Breastfeeding has no known association with maintenance of normal external genital contour in infants. There are still innumerable growth factors and hormones in the breastmilk which may protect from labial adhesion that remain unstudied. The estrogen levels in the blood and feces of breastfed and formula or cow's milk fed babies need evaluation to support or refute the association of stopping breastfeeds and the development of labial adhesion [14].

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