ISSN- O: 2458 - 868X, ISSN–P: 2458 – 8687
Index Copernicus Value: 68 . 16
PubMed - National Library of Medicine - ID: 101731606

International Journal of Medical Science and Innovative Research (IJMSIR)
IJMSIR : A Medical Publication Hub
Available Online at: www.ijmsir.com
Volume – 5, Issue – 1, February - 2020, Page No. : 369 - 374

Prevalence of tongue tie in neonates – an observational study

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Citation this Article: Dr Pallavi Sharma, Dr Deep Jyoti, Dr. Ashu Jamwal, "Prevalence of tongue tie in neonates – an observational study", IJMSIR- February - 2020, Vol – 5, Issue -1, P. No. 369 – 374.

Type of Publication: Original Research Paper

Conflicts of Interest: Nil

Abstract

Background: Tongue- tie (Ankyloglossia) is a common condition occurring in new borns. It is associated with various problems like painful breast feeding, sore nipples thus early cessation of breast feeding. Prevalence of Ankyloglossia has been reported in the literature world wide ranging from 3%- 16%.

Methods: Present study was conducted in the department of Paediatrics, SMGS Hospital, GMC Jammu after approval from the Institutional ethical committee. It was a cross sectional observational study comprising of a sample of 200 neonates admitted/delivered in the hospital. Data was collected over a period of one week. Informed consent was taken from the mothers. Variables studied were age and sex of the neonates, mode of delivery and type of feeding, including breastfeeding and bottle feeding. Grading of ankyloglossia was done according to the Bristol tongue tie assessment tool (BTAT).

Results: During the study period 200 neonates were enrolled in the study including 114 males and 86 females with age ranging from 0-30 days. Total of 30 neonates were observed to have tongue- tie of various grades according to BTAT. Prevalence of the tongue tie in our study population was 15%. Out of the 30 neonates having Ankyloglossia, 17(56.67%) were males and 13(43.33%) were females. 20 neonates were delivered by normal vaginal delivery while 10 were delivered by caesarean section.

Conclusion: It must be a routine practice to assess tongue tie in all newborns and to assess breastfeeding difficulties so that necessary intervention can be provided.

Keywords: Ankyloglossia, Bristol tongue tie assessment tool (BTAT), Painful breast feeding.

Introduction

Ankyloglossia, commonly known as tongue tie, is defined as limitation in protrusion and elevation of tip of the tongue due to short frenulum and/or genioglossus muscle.[1, 2] Lingual frenulum is a fibromembranous band which connects under surface of the tongue to floor of the mouth. It is an abnormal residual tissue that originates during the development of the oral cavity.[3]

Prevalence of ankyloglossia has been reported in the literature worldwide ranging from 3% -16%[4,5,6,7,8]. The lack of uniform definition of ankyloglossia and different parameters to measure the degree of

ankyloglossia has led to variation in the reported prevalence.[9]

Ankyloglossia may lead to a wide variety of problems during breastfeeding both to the mother as well as to the baby. Feeding difficulties have been reported in 25%- 44% of the infants with ankyloglossia[5,10,11,12]. Infants face difficulty in effective latching, adequate sucking resulting in inadequate weight gain. Mothers usually experience sore nipples and breast pain. This may lead to breast engorgement, mastitis, decreased milk supply and thereby failure of lactation.

The present study was done to study the prevalence of ankyloglossia in the neonates admitted in the perinatal and neonatal wards in SMGS hospital GMC. Feeding difficulties associated with the breastfeeding in the neonates with ankyloglossia were also assessed.

Materials and methods

The present study was conducted in the department of Paediatrics, SMGS Hospital, GMC Jammu. The study was approved by the Institutional ethical committee. It was a cross sectional observational study comprising of a sample of 200 neonates admitted/delivered in the hospital. Data was collected over a period of one week. Informed consent was taken from the mothers. Variables studied were age and sex of the neonates, mode of delivery and type of feeding, including breastfeeding and bottle feeding. Mother was asked if the child had any problem in latching, painful breastfeeding, sore nipples. Family history of ankyloglossia was also recorded. Intraoral examination was done to look for the ankyloglossia. Grading of ankyloglossia was done according to the Bristol tongue tie assessment tool[12] .BTAT consists of four components that include appearance of the tongue tip, location of alveolar attachment, ability to lift the tongue and protrusion of the tongue. A score ranging from 0-8 is generated according to this tool. Decrease in score indicates increase in the severity of the tongue tie.

Table 1: Bristol Tongue tie Assessment Tool (BTAT)

Bristol Tongue tie Assessment Tool	Score		
	0	1	2
Appearance of tongue tip	Heart shaped	Slight cleft/ notched	Rounded
Appearance of frenulum to lower gum edge	Attached at top of gum ridge	Attached to inner aspect of gum	Attached to floor of mouth
Lift of tongue wide mouth range(crying)	Minimal tongue lift	Edges only to mid-mouth	Full tongue lift to mid mouth
Protrusion of tongue	Tip stays behind gum	Tip over gum	Tip can extend over lower lip

Total score of 0-3 indicate severe reduction of tongue function

Those mothers complaining of feeding difficulties were referred for breastfeeding counselling. This included suggestions regarding nursing position, effective latching, suck training. If feeding problems did not settle the child was referred for frenotomy.

Statistical Analysis

All the statistical work was done using SPSS

Results

During the study period 200 neonates were enrolled for the study including 114 males and 86 females with age ranging from 0 to 30 days. A total of 30 neonates were

observed to have tongue tie with various grades according to BTAT. Prevalence of the tongue tie in our study population was 15%. Out of the 30 neonates having ankyloglossia, 17(56.67%) were males and 13(43.33%) were females. 20 neonates were delivered by normal vaginal delivery while 10 were delivered by caesarean section. Family history of ankyloglossia was seen in 3 (10%) neonates. Poor latch was seen in 12(40%) neonates. In 2(6.67%) cases, mothers complained of painful breastfeeding session due to sore nipples. 18 neonates with ankyloglossia were given breastfeed, 3 neonates were given bottle feed while breastfeed and bottle feed was used in 9 neonates.

According to BTAT, scores were grouped in 4 groups as shown in Table 4. Most common grade of tongue tie was seen with score of 4 or 5 in 14(46.67%) neonates with tongue tie. Severe form of tongue tie was seen in 7(23.33%) neonates including 4 males and 3 females with score of less than 3. These neonates were advised further follow up in ENT for frenotomy. All the babies with feeding difficulty were advised for breastfeeding counselling session in department of paediatrics.

Table 2

Ankyloglossia	Male	Female	Total
1. Present	17	13	30
2. Absent	97	73	170
Total	114	86	200

Table 3: Clinical demographics and breast feeding difficulties in babies with Ankyloglossia

Characteristics	Male	Female	Total
Poor latch	6	6	12
Nipple pain/ sore nipple	2	-	2
Family history of tongue tie	2	1	3
Mode of delivery			
1. Vaginal delivery	10	10	20
2. Caesarean delivery	7	3	10
Mode of feeding			
1. Breastfeeding	10	8	18
2. Bottle-feeding only	2	1	3
3. Mixed	5	4	9

Table 4: BTAT Grading of Ankyloglossia

Bristol grading	Male	Female	Total	Percentage
0-1	1	1	2	6.67%
2-3	3	2	5	16.67%
4-5	8	6	14	46.67%
6-8	5	4	9	30%
Total	17	13	30	

Discussion

Prevalence of tongue in our study was 15%. This is comparable to the results reported in previous studies done on ankyloglossia. Gonzales et al reported 12.11% prevalence of tongue tie in multicentre observational study on 677 newborns by using Coryllos classification[9]. Amat EF et al reported 15.5% prevalence of tongue tie in infants less than 6 months of age in the hospital based study[13]. However these results are more than that of reported by Messner et al 2000 who reported a prevalence of 4.8% in infants and Ricke et al 2005 who found a prevalence of ankyloglossia 4.2% in neonates with age up to 30 days postpartum using Hazelbaker's assessment tool[4,5]. These variations in the reported results could be due to different types of assessment tools being used in different studies which make it difficult to compare the results between the studies. There are a wide variety of tools being used for ankyloglossia assessment but there is clearly no accepted, widely used method for diagnosing ankyloglossia [11, 14] Development of concise, standard,

validated tool is necessary research and will allow researchers to analyse data from different clinical trials Bristol tongue assessment tool (BTAT) was used in this study as it is simpler and less time consuming. This scale is easy to use and has good inter-user reproducibility. [8]

Male to female ratio in newborns with tongue tie was 1.3:1 in the present study, showing male predominance. Male predominance is reported in the previous studies also. [4,5,6,15,16]. Genetics also play an important role in this condition [7,9] . There is high prevalence reported in males supported by genetic studies suggesting a pattern of X- linked inheritance. [17,18] Family history of ankyloglossia was observed in 3 patients (10%) with male to female ratio of 2:1. Tongue tie was present either in elder sibling or in one of the parents. However Amat et al and Gonzales et al both reported high genetic correlation of 25% having family history mostly in first degree relatives.[9,13]

Difficulty in breastfeeding was reported in 12 (40%) patients. These babies were observed to have difficulty in latching. Sore nipples were seen in only 2 mothers. Messner AH et al observed that majority of the babies with tongue tie had no problem in breastfeeding. Only 4 out of the 24 patients in their study failed to breastfed their infants[4]. Another study by Messner AH et al reported that about 25% of the babies face difficulty in latching to the breast or mothers complained of prolonged nipple pain[10].

According to BTAT, less than 3 score is considered severe reduction in function of the tongue. Most of the neonates had score of 4 or more (76.67%). 7 out of 30 (23.34%) neonates had score of 3 or less. 5 out these 7 were observed having feeding difficulty. All the neonates presenting with difficulty were given lactation counselling. All the patients with ankyloglossia were advised follow up for further assessment of tongue functions and feeding difficulties. Some of the studies found no association between ankyloglossia and breastfeeding difficulty[13,19]. Frenotomy or release of tongue tie is an interventional procedure to improve the functions of the tongue. Lingual frenotomy is frequent procedure advised by health professional to treat ankyloglossia and breastfeeding difficulties [20]. Surgical intervention is considered necessary when there is association between ankyloglossia and problems linked to the breastfeeding. Dixon et al developed a pathway about the assessment and management of the tongue tie associated with breastfeeding difficulties[8]. According to this scale most of the parents need assurance. If the tongue tie is creating breastfeeding difficulty, babies should be referred to the lactation consultant. If indicated, lactation consultant will further refer for tongue tie release.

Conclusion

This is the first kind of study conducted in our institute to assess the prevalence of tongue tie in the newborns. There is prevalence of tongue tie in 15% of the neonates. Therefore it must be a routine practice to assess ankyloglossia in all newborns and assess the breastfeeding difficulties so that necessary intervention can be provided. A thorough oral examination should be done to observe the mobility and function of the tongue. There is also further need to standardise the assessment tools and criteria so that results can be compared within different studies conducted in different areas and by different practitioners.

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