

Original research article

Association of acute otitis media with breast feeding position among infants at a tertiary care hospital

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Abstract

Background: Acute suppurative otitis media (ASOM) is one of the most common infections in children. ASOM is usually caused by either a bacterial or viral pathogen and often treated with antibiotics. Various studies have found that feeding infants and young children in supine body position has been connected with Otitis media but no association has been reported between infant feeding position and respiratory or general morbidity.

Objective: To study the association of ASOM with breast Feeding position among infants at Tertiary Care Hospital.

Methods: The study was done over a period of 18 months which included the children visiting Pediatric OPD and Otorhinolaryngology OPD with history of ear discharge. The inclusion criteria being the infant's breastfed up to 1 year of age. The collected data was tabulated in Microsoft excel and statistical analysis was done using software SPSS 22.

Results: A significant association was found between increasing age and position of breast feeding. ASOM was more common in the infants of 10-12 months (66.7%), who were fed in the supine position.

Conclusion: Proper positioning of infant is important to avoid ASOM in infants. Upright posture is relatively safer than supine posture in infants.

Keywords: Acute suppurative otitis media, infant, breast feeding

Introduction

Human milk provides infants with antimicrobial, anti-inflammatory, and immunomodulatory agents that contribute to optimal immune system function. The act of breastfeeding allows important bacterial and hormonal interactions between the mother and baby and impacts the mouth, tongue, swallow and eustachian tubes ^[1]. The inflammation of mucoperiosteal lining of the middle ear cleft of rapid onset, infective in origin, and associated with a middle ear effusion, and a varied collection of symptoms, which include ear discharge, irritability, earache, fever, excessive crying and ear pulling is called Acute suppurative otitis media (ASOM). The 80% of children experience at least one episode of (ASOM by three years of life ^[2]. The Eustachian tube in the infant is wider, shorter and horizontal than in adults, which accounts for the higher rates of otitis media in infants ^[3]. The increased incidence of otitis media in infants is due to structural and functional immaturity of eustachian tube and immature immune system ^[4]. ASOM is one of the most common infections in children ^[5]. ASOM is usually caused by either a bacterial or viral pathogen and often treated with antibiotics ^[6]. Respiratory tract infections and Otitis media are major causes of morbidity in infants and young children. Feeding infants and young children in supine body position has been connected with otitis media but no association has been reported between infant feeding position and respiratory or general morbidity ^[7].

In the present study our objective was to analyze the infants with improper breastfeeding posture with occurrence of acute supportive otitis media in children.

Materials and Methods

The study was done over a period of 18 months which included the children visiting Pediatric OPD and Otorhinolaryngology OPD with history of ear discharge. The inclusion criteria being the infant's breastfed up to 1 year of age. The exclusion criteria being infants with craniofacial anomalies like cleft lip, cleft palate, babies with neurological deficits affecting feeding and gross congenital anomalies. After obtaining socio-demographic data, a detailed history of ear discharge, identification of ear discharge and

number of episodes, unilateral or bilateral, mother's knowledge on breast feeding, positioning the infant during breast feeding, burping following each feed were recorded. Otoscopic evaluation was done and ear discharge was sent for culture and sensitivity. The collected data was tabulated in Microsoft excel and statistical analysis was done using software SPSS 22.

Results

Table 1: Gender wise distribution of infants with ASOM

Gender	No.	Percentage
Male	65	56.03%
Female	51	43.97%
Total	116	100%

Table 1 shows that there were a total of 116 infants included in our study, of which 65(56.03%) were males and 51(43.97%) were females.

Table 2: Age distribution of infants with ASOM in relation to different positions of breast feeding

Age (in months)	Supine position (n=58)	Upright position (n=58)	Total (n=116)	p value
1-3 months	07 (29.17%)	17 (70.83%)	24 (20.69%)	P=0.021
4-6 months	09 (33.3%)	18 (66.67%)	27 (23.28%)	P=0.047
7-9 months	18 (62.06%)	11 (37.93%)	29 (25.00%)	P=0.198
10-12 months	24 (66.67%)	12 (33.33%)	36 (31.03%)	P=0.016

Table 2 shows that out of the 116 infants, 24(20.69%) were between 1-3 months, 27(23.28%) were between 4-6 months, 29(25.00%) were between 7-9 months and 36(31.03%) were between 10-12 months of age. 58(50%) of the mothers fed the baby in upright position and 58(50%) in supine position. It was noted that in the initial first 6 months of breast-feeding position was predominantly upright and as the age advanced it was supine position. A significant association was found between increasing age and position of breast feeding. ASOM was more common in the infants of 10-12 months 24(66.7%), who were fed in the supine position. A statistically significant association was found in infants with ASOM at 10 to 12 months of age with breastfeeding in supine position (P=0.016).

Table 3: Age distribution of infants with ASOM in relation to number of episodes

Age (in months)	First episode (n=95)	Second episode (n=19)	Third episode (n=2)	Total (n=116)
1-3 months	24 (25.26%)	00 (0%)	00 (0%)	24 (20.69%)
4-6 months	25 (26.32%)	02 (10.52%)	00 (0%)	27 (23.28%)
7-9 months	23 (24.21%)	06 (31.58%)	00 (0%)	29 (25%)
10-12 months	23 (24.21%)	11 (57.90%)	02(100%)	36 (31.03%)

Table 3 shows that out of 116 infants, 95(81.89%) had First episode, 19(16.37%) had Second episode and only 02(01.74%) had third episode of ASOM. Majority of the infants who had the second episode of ASOM(57.90%) were in the age group of 10-12 months. 2 infants in the age group of 10-12 months had the third episode of ASOM, whereas none of the infants in the other age groups had the third episode of ASOM.

Table 4: Age distribution of infants with ASOM in relation to laterality

Age (in months)	Unilateral (n=106)	Bilateral (n=10)	Total (n=116)
1-3 months	24 (22.64%)	00 (0%)	24 (20.69%)
4-6 months	27 (25.47%)	00 (0%)	27 (23.28%)
7-9 months	28 (26.41%)	01 (10%)	29 (25%)
10-12 months	27 (25.48%)	09 (90%)	36 (31.03%)

The table 4 shows that out of 116 infants, 106 had unilateral ASOM and only 10 had bilateral ASOM. Bilateral ASOM was seen only in the age group of 7-9 months (10%) and 10-12 months (90%). Upto 7 months of age none of the infants presented with bilateral ASOM.

Table 5: Aural swab culture and sensitivity reports

Aural swab culture report	No.	Percentage
Culture positive	72	62.07%
No growth on culture	44	37.93%
Total	116	100%

Table 5 shows that out of the 116 aural swabs sent for the culture and sensitivity, 72(62.07%) were culture positive and 44(37.93%) showed no growth.

Table 6: Organism isolated from aural swab culture

Organism isolated	No.	Percentage
Haemophilus Influenza	31	43.06%
Streptococcus Pneumonia	29	40.28%
Staphylococcus Aureus	07	09.72%
Pseudomonas	02	02.78%
Klebsiella species	02	02.78%
MRSA	01	01.38%
Total	72	100%

Table 6 shows that out of the 72-culture positive aural swabs, the commonest organism isolated was Haemophilus Influenza (43.06%). The second most common organism was Streptococcus Pneumonia (40.28%), followed by Staphylococcus Aureus (09.72%), Pseudomonas (02.78%), Klebsiella species (02.78%) and MRSA (01.39%).

Discussion

World Health Organization currently recommends exclusive breast feeding for infants up to 6 months of life and to continue the breastfeeding up to 2 years of age and beyond [8]. In addition to the protective effects, a good positioning of the infant during breastfeeding by supporting the head with mother’s arm at a more horizontal position prevents the milk reflux through the eustachian tube [9].

Among the 116 infants included in our study, although prevalence was more in males no significant sex difference was found, which was similar to studies done by Rasool ST *et al.* [2] and P. Sangeetha *et al.* [4]. On analyzing the age distribution of infants with ASOM in relation to different positions of breast feeding, our study found statistically significant association of infants with ASOM at 10 to 12 months of age with breastfeeding in supine position. It was similar to the study done by Rasool ST *et al.* [2] and Sangeetha *et al.* [4] all the three studies reported statistically significant association and also found that the predominant feeding position was upright in the first 6 months of life and as age advanced it was supine posture. It was associated with increased incidence of ASOM with age, thus concluding the direct association of position during breast feeding with ASOM. This could be because at first 6 months of life it is relatively easier for mothers to properly position the baby in upright posture during feeding. But as the age advances, weaning is initiated and the infants are more often fed only in the bedtime where supine posture is convenient. This explains the increased incidence of ASOM with age in relation to breast feeding position.

In our study bilateral ASOM was found only in 10% of the infants whereas a study by M Regina *et al.* [10] found bilateral ASOM in 22% of the cases. On analyzing the number of episodes of ASOM with age, it was more in infants aged between 10-12 months of age which was similar to the study done by Sangeetha *et al.* [4] and Fani Ladomenou *et al.* [11] The most common organism isolated from the culture was Haemophilus Influenza followed by Streptococcus Pneumonia which was again similar to study done by Sangeetha *et al.* [4].

Conclusion

Thus, our study concludes that the proper positioning of infant is important to avoid ASOM in infants. Upright posture is relatively safer than supine posture in infants.

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