



Prevalence Of Common Dermatological Problems Of Neonates : A Prospective Study

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Abstract

Introduction :

Neonatal dermatology, by definition, encompasses the spectrum of cutaneous disorders that arise during the first 4 weeks of life. Many such conditions are transient, appearing in the first few days of life, only to disappear shortly thereafter. The neonatal period is one of rapid adaptation in which the skin plays an important role and fully assumes for the first time its function as a barrier and of thermoregulation.² But the majority of the neonatal cutaneous lesions are usually physiological, transient and self-limited and thus require no therapy. It is necessary to differentiate between benign and clinically significant skin lesions in neonates.

Aims Of The Study : To study the prevalence of skin lesions in new born. To identify the physiological and pathological skin lesions in new born. To study the correlation between prevalence of skin lesions in new born and various neonatal and maternal factors.

Methods : This is a cross-sectional Observational study was conducted in the year 2020-2021 at Dhanalakshmi Srinivasan Medical College and Hospital., preambular, Trichy, Tamil Nadu, India. A routine general and systemic examination were performed too. Relevent findings were noted and entered according to the predesigned proforma. This included Antenatal, Natal ,Postnatal events. As the study was based on clinical manifestations no laboratory test were done as per the requirement. The data thus collected was analysed for evaluating the pattern of skin lesions and with their relation to various parameters mentioned above.

Results : Mongolian spot is significantly higher in normal birth weight male babies. In mature male newborns, the prevalence of combined occurrence of Erythema Toxicum and Mongolian spot is found to be significantly higher. Erythema Toxicum was seen significantly higher in low birth weight babies even though its occurrence is similar in both male and female new born. Lesions like Sebaceous hyperplasia, Neonatal acne, Miliaria, Sucking blisters, Transient neonatal pustular melanosis and Milia was seen predominantly in premature female neonates.

Conculsion : Transient lesions were the frequently noted skin lesions noted in our study with Erythema Toxicum Neonatorum are the most common closely followed by Mongolian Spots. Most of the transient lesions resolved within one week of life .There exist significant relation between gestational age and the occurrence of transient lesion, for these only two categories of gestational age has been considered, Preterm and term. The Fisher's value is 29.599 with P value 0.000<0.001. In mature newborns, the pervasiveness of Erythema Toxicum and Mongolian spot was found to be significantly higher. Among premature neonatal majority of them, that is 75% of them, were having other skin lesions like Sebaceous hyperplasia, Neonatal acne, Miliaria, Sucking blisters, Transient neonatal pustular melanosis and Milia.

Keywords: Paediatric dermatoses, Atopic dermatitis, Infectious dermatitis

Introduction

A newborn's skin may exhibit a variety of changes during the first four weeks of life. Most of these changes are benign and self-limited, but others require further work-up for infectious etiologies or underlying systemic disorders. Nearly all of these skin changes are concerning to parents and may result in visits to the physician or questions during routine newborn examinations. Thus, physicians who care for infants must be able to identify common skin lesions and counsel parents appropriately. [1] Although, they are benign in nature, sometimes they are a major source of parental concern leading to parental anxiety. They may be transient and physiological occurring in normal neonates or they can persist as birth marks. They can denote an underlying serious systemic disorder. Furthermore, the neonatal skin presents distinct characteristics when compared to that of children or adults, and hence demands special care. [2] Physicians caring for neonates must be able to identify these dermatoses and counsel parents appropriately. Neonatal skin maturation occurs with development of the stratum corneum, which provides the barrier function. It becomes fully keratinized in utero between 32 and 34 weeks of gestational age.[3] Hence, premature neonates have impaired barrier functions and are susceptible to infections and heat and water loss through the skin. It has been reported that skin barrier therapy during the neonatal period reduces the risk of nosocomial sepsis.[4] Most skin lesions such as erythema toxicum neonatorum, acne neonatorum, transient neonatal pustular melanoses, milia and miliaria are benign and transient so no specific treatment is required. Infants with unusual presentations or signs of systemic illness should be evaluated for infections like candida, viral or bacterial infections.[5] Seborrheic dermatitis is extremely frequent and should be treated appropriately. Blistering disorders and erythroderma, are rare, however they can be associated with significant morbidity and mortality and require appropriate management. Birthmarks can be divided into three groups, pigmented, vascular and those due to abnormal development of tissues.[6] Nearly all

birthmarks are of concern to parents, and some may require further work-up for underlying systemic defects or malignant potential. Large and multiple congenital melanocytic nevi require evaluation for neurocutaneous melanoses. The neonatologist should be aware of current treatment recommendations for vascular birthmarks, and be able to identify those that require management in a multi-disciplinary setting. With few exceptions, benign birthmarks, such as Mongolian spots, dermal melanosis, hemangioma of infancy, port-wine stain and epidermal nevi do not require active intervention. High- and intermediate-risk skin markers of spinal dysraphism such as dermal sinuses, tails, atypical dimples and multiple lesions of any type should be identified as they require evaluation the magnetic resonance imaging or ultrasonography for spinal cord and brain involvement. [7] Topical therapy in neonates should be carefully modified as there is a higher chance of percutaneous absorption and systemic toxicity. Several drugs and chemical agents have been implicated as causes of toxicity by percutaneous absorption in newborn and preterm skin, such as Castellani's paint, boric acid, salicylic acid, urea, corticosteroids, hexachlorophene (encephalopathy), lindane and alcohol based antiseptics, such as iodized alcohol (hemorrhagic necrosis). These should be avoided and whenever invasive procedures are necessary povidone-iodine based antiseptics should be used and thoroughly removed soon after completing the procedure in order to avoid high levels of plasmatic iodine, which can cause hypothyroidism. Another area of concern is the issue of the toxic effects of ingredients found in water-based products like preservatives and fragrances[8]. Currently, the evidence-based guideline for neonatal skin care recommends 2-4 weeks of skin care product application in order to prevent excessive transepidermal water loss in preterm neonates, delivered prior to 32 weeks of gestation. Recommendations are to use an oil or petrolatum-based skin care product for at least 2-4 weeks. However, silicone based products may be safer as petrolatum-based products are composed of highly

inflammable hydrocarbons, combustible in an oxygen-rich environment of incubators.[9] In addition, the acid mantle of newborn skin which has a bactericidal effect needs to be maintained. All alkaline soaps that increase the pH of the skin should be avoided during the first week of life. ‘Though the neonatal care has radically changed over the years, skin care has lagged behind and has been hampered due to increase in the need for invasive monitoring and procedures. Although a number of studies have reported on their incidence, very little is known about the factors that influence them[10] . We set out to investigate a large population of neonates with the aims of achieving an overall picture of neonatal skin manifestations, and examining their relationships with various maternal, neonatal and perinatal factors.

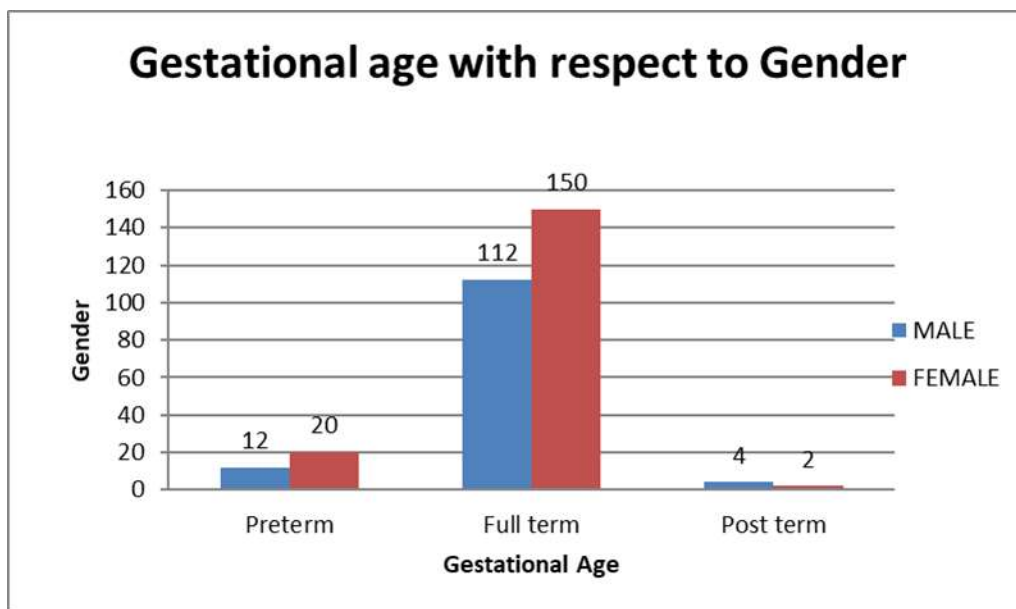
Methods :This is a cross-sectional Observational study was conducted in the year 2020-2021 at Dhanalakshmi Srinivasan Medical College and Hospital., preambular, Trichy, Tamil Nadu, India. Every neonates were examined within 24hrs of birth in detail for skin lesions.The neonates were examined daily for any developmentof skin lesions through out the hospital stay and were advised to revisit if they develop any cutaneous lesions within one month of life.When lesions are present the morphology ,distribution and progression was noted down.A routine general and systemic examination were

performed too. Relevent findings were noted and entered according to the predesigned proforma. This included Antenatal,Natal ,Postnatal events.As the study was based on clinical manifestations no laboratory test were done as per the requirement. The data thus collected was analysed for evaluating the pattern of skin lesions and with their relation to various parameters mentioned above.

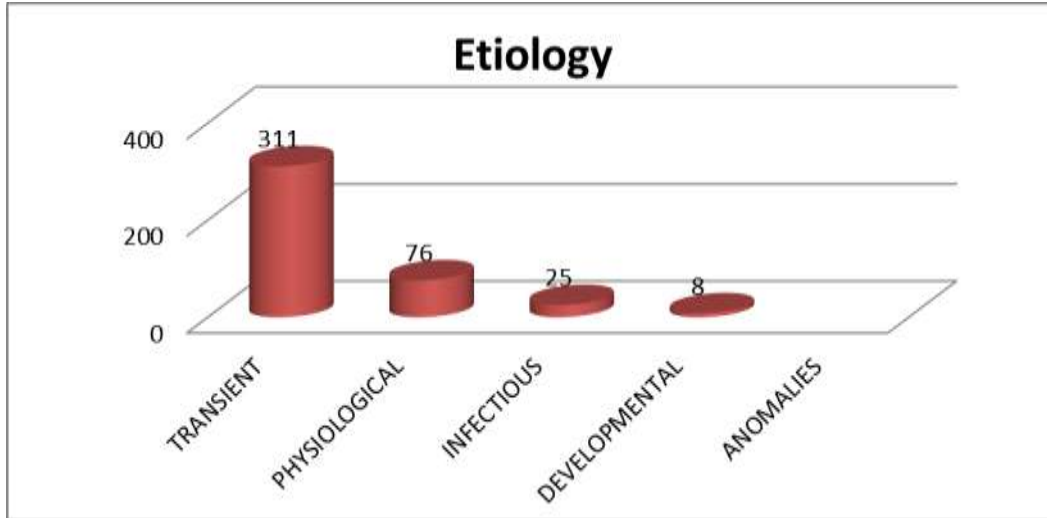
Statistical methods: Data was collected on predesigned proforma for each individual case and analyzed using computer based SPSS- 21software. The data were analyzed by Chi – Square test. The p-value < 0.05 was considered as statistically significant.

Results

In our study 300 neonates were included fulfilling the inclusion criteria.200 babies were enrolled from the NICU, Postnatal ward ,OPD of pediatrics and dermatology dept of Dhanalakshmi Srinivasan Medical College and Hospital., perambalur, Trichy, Tamil Nadu, India and 100 babies were entrolled from the NICU and postnatal ward Out of 300 babies, 128 were boys and 172 were girls, of which 32 were preterm (<37weeks of gestation) 262 were full term births (37 to 42 weeks) 6 were post term (>42 weeks). (Table 1, Graph 1). 273 babies were of appropriate weight, 27 babies were found to be low birth weight.

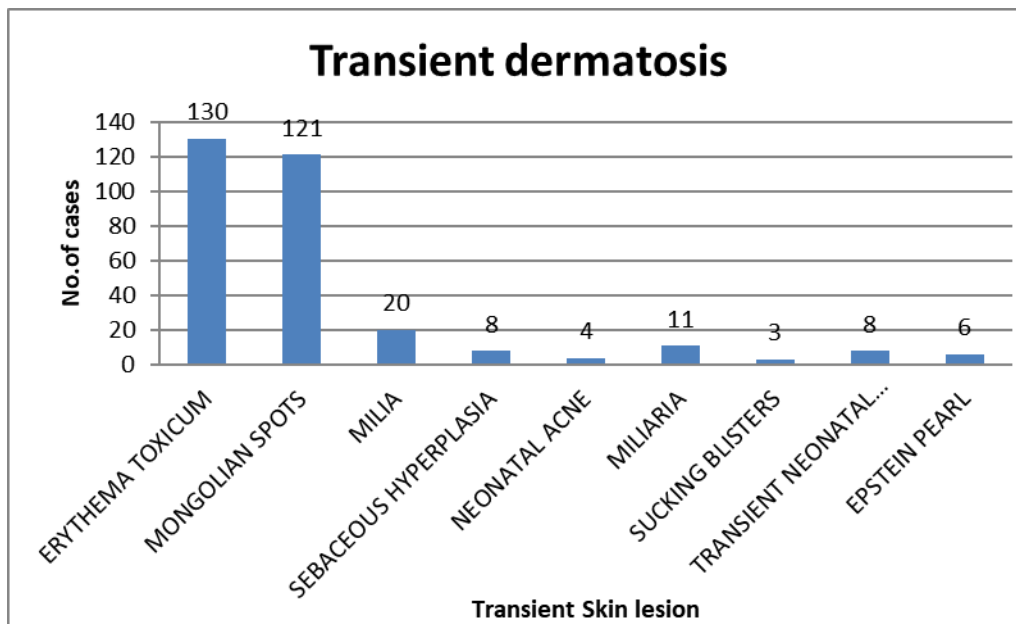


Graph 2: etiological analysis

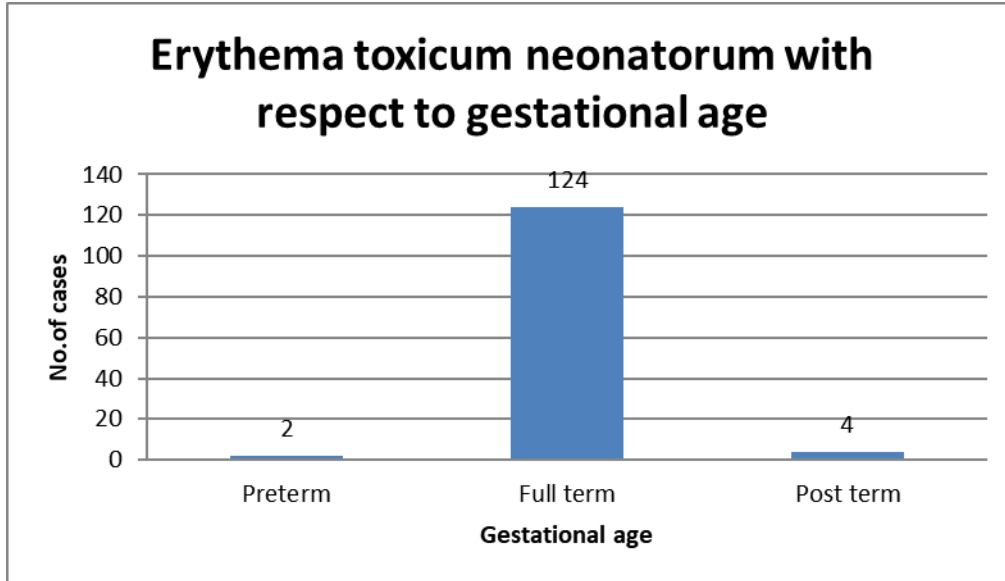


Graph :2 shows the most commonly occurring transient dermatosis which were seen as 311 dermatosis in 300 cases since many babies were having multiple lesions

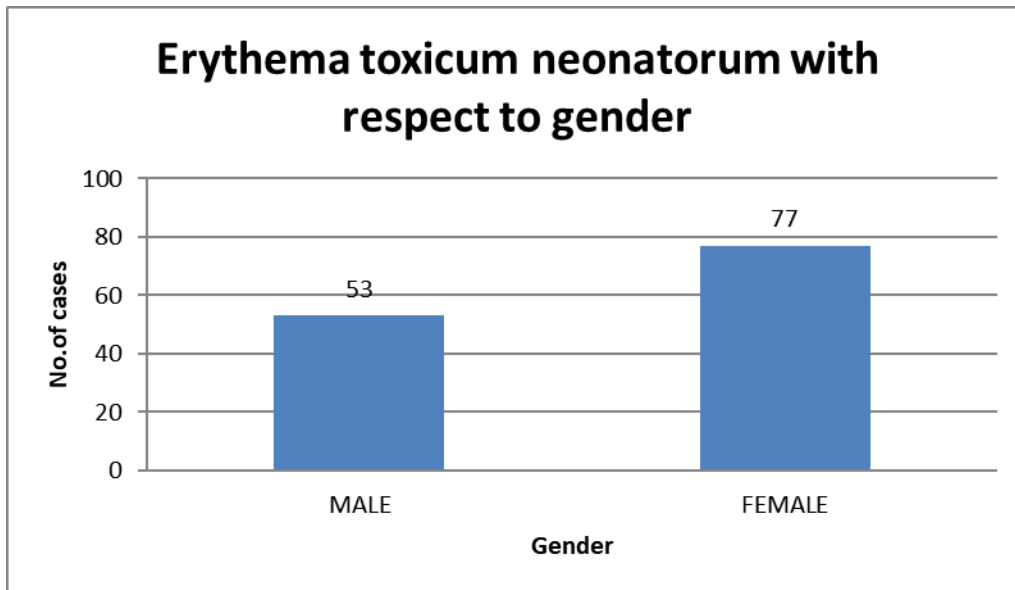
Graph 3: transient dermatosis



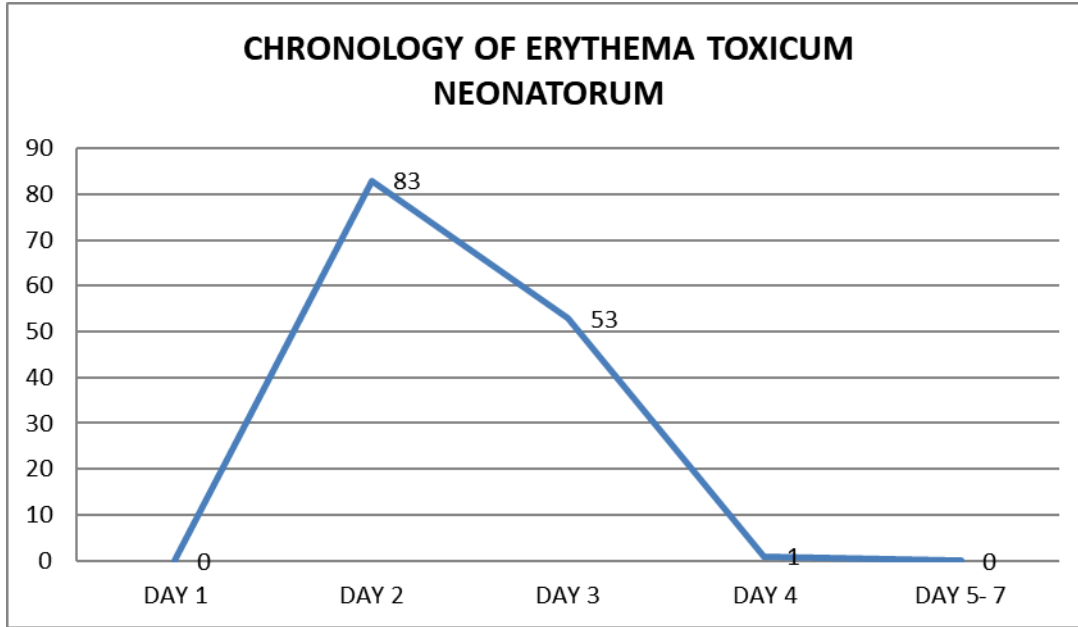
Graph 4 erythema toxicum



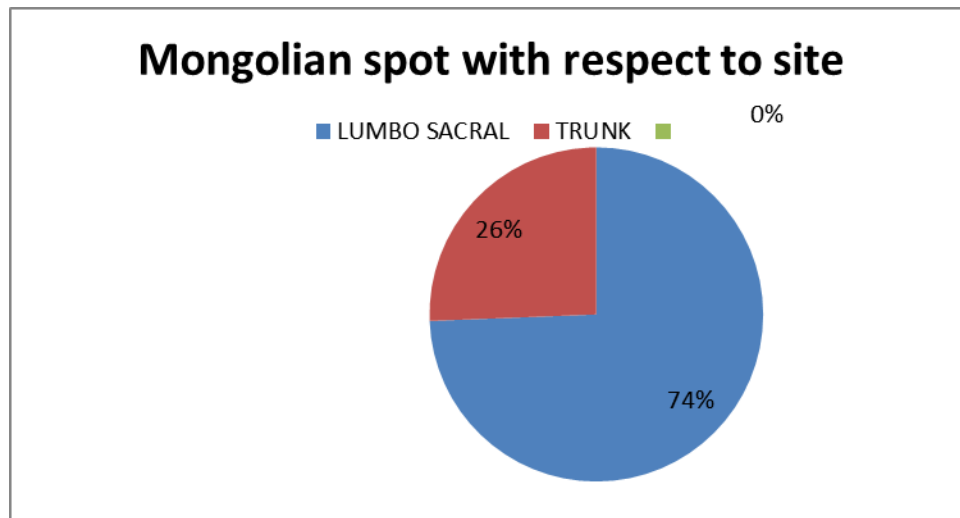
Graph 5



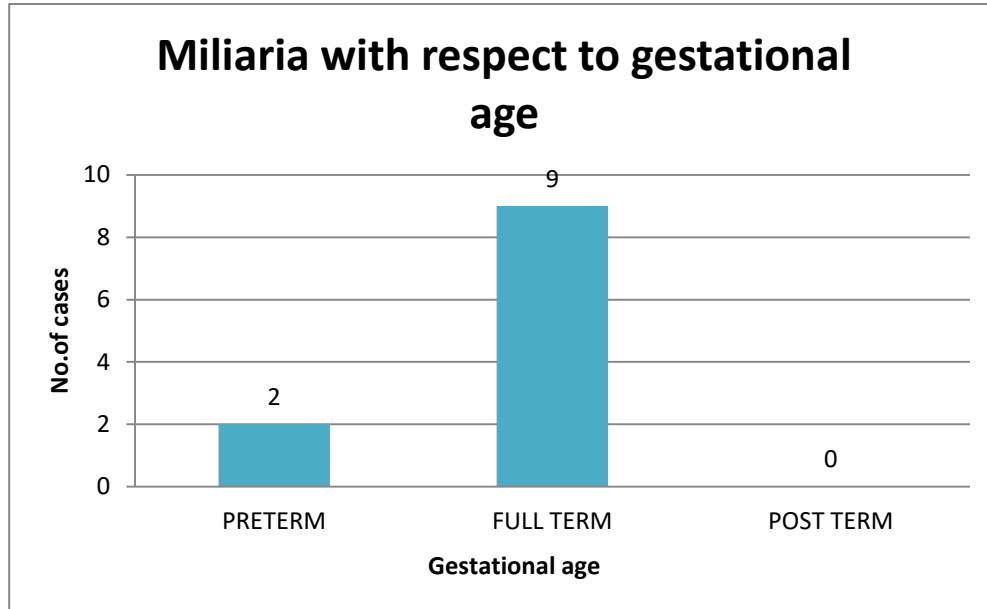
Graph 6



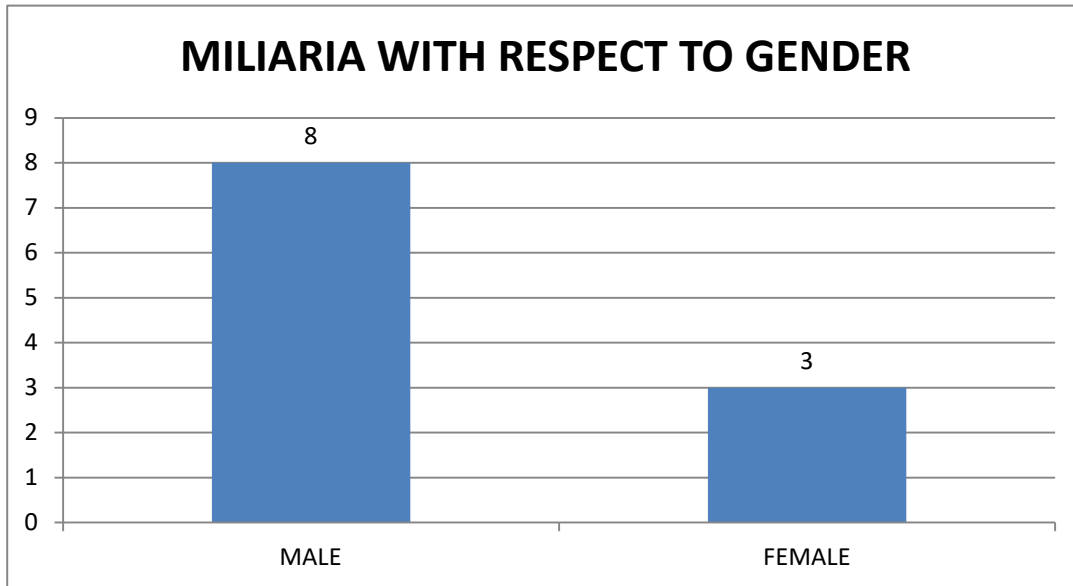
Graph 7



Graph 8

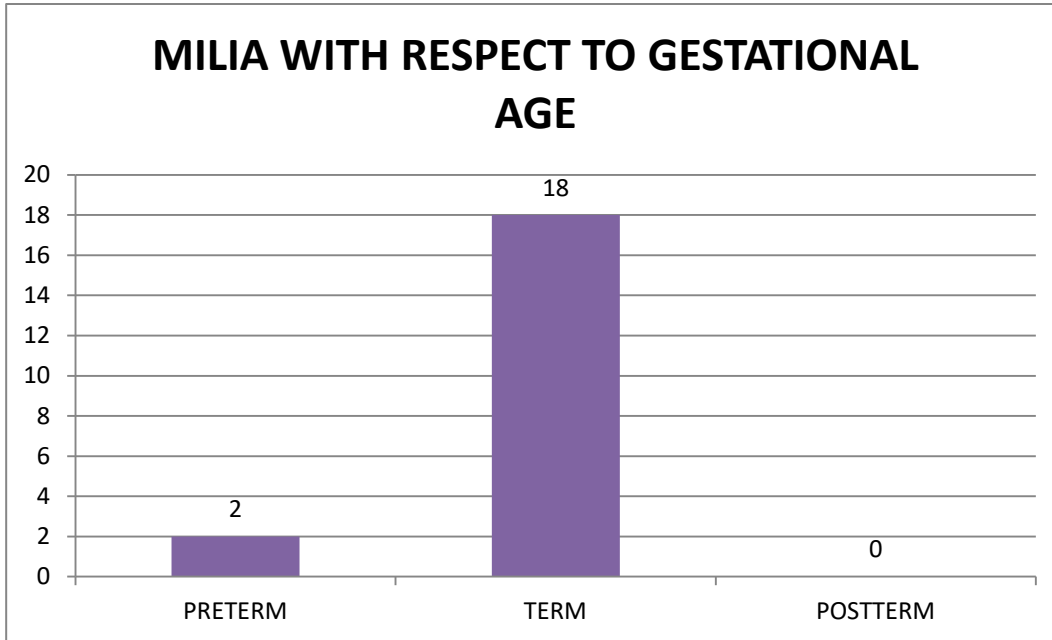


Graph 9



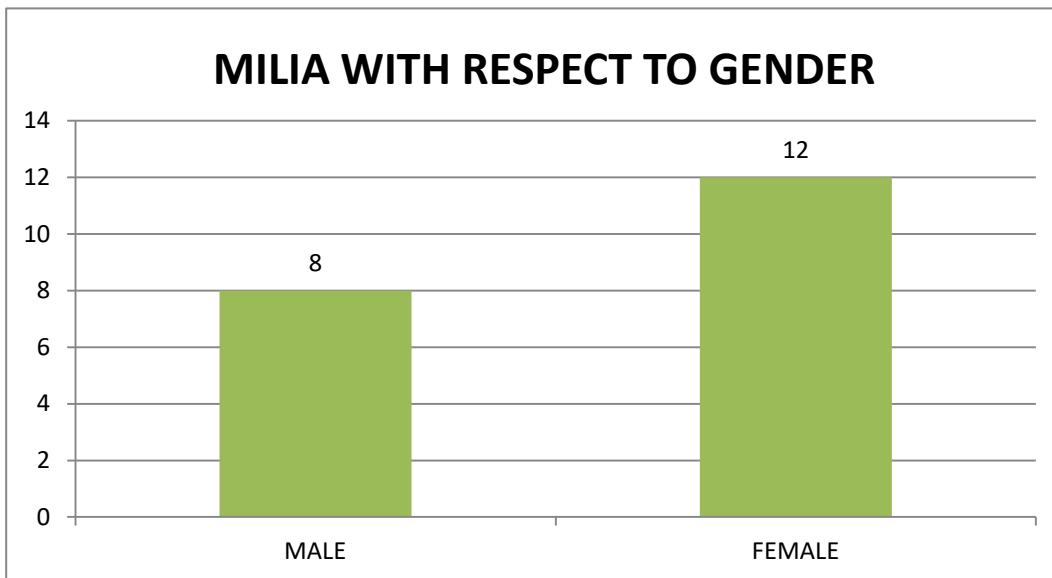
Out of 11 babies 8 were males and 3 were females with crystalline type 8 and rubra type 3

Graph 10



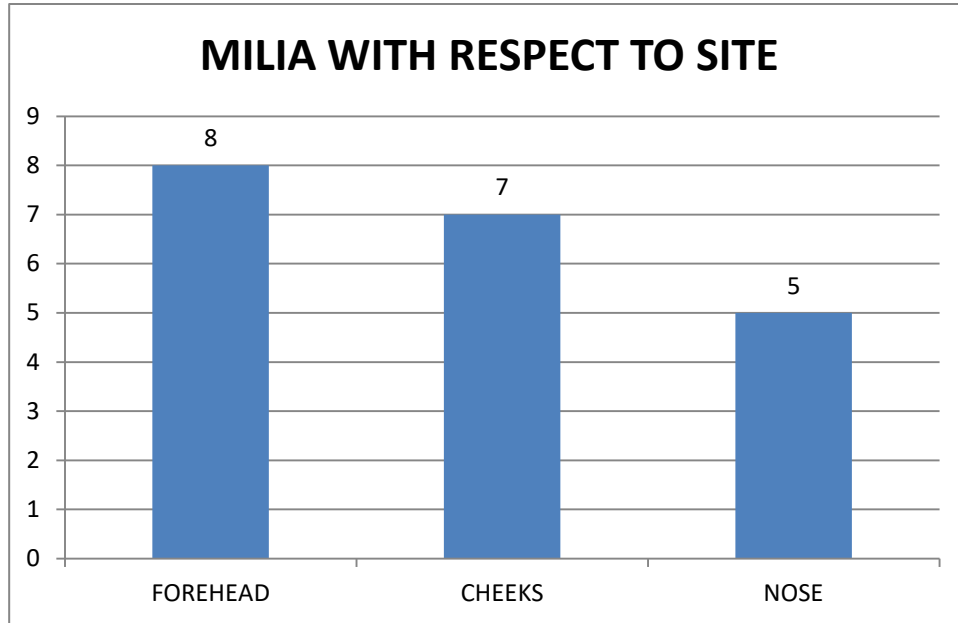
Out of 20 cases 18 were term and 2 were preterm with 12 female gender and 8 males.

GRAPH:11



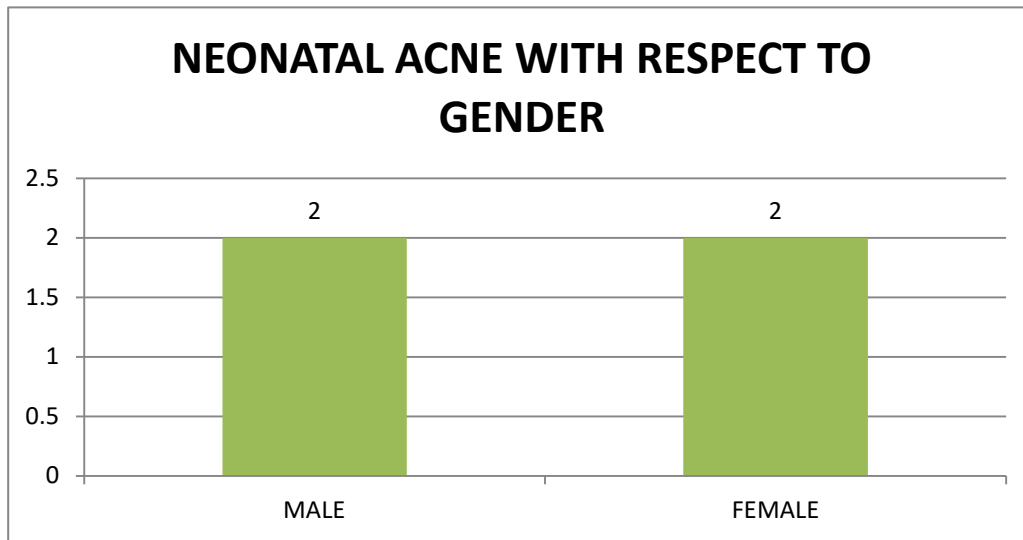
Out of 20 Milia cases 8 were males and 12 were females

Graph 12



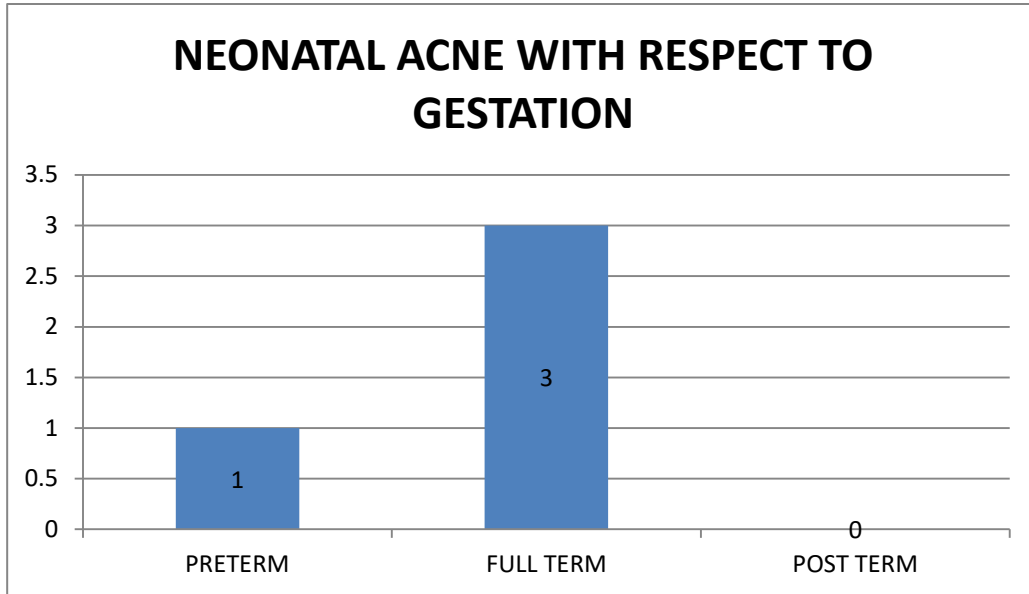
Out of 20, 8 were in forehead, 7 in the cheeks and 5 in the nose.

Graph 13



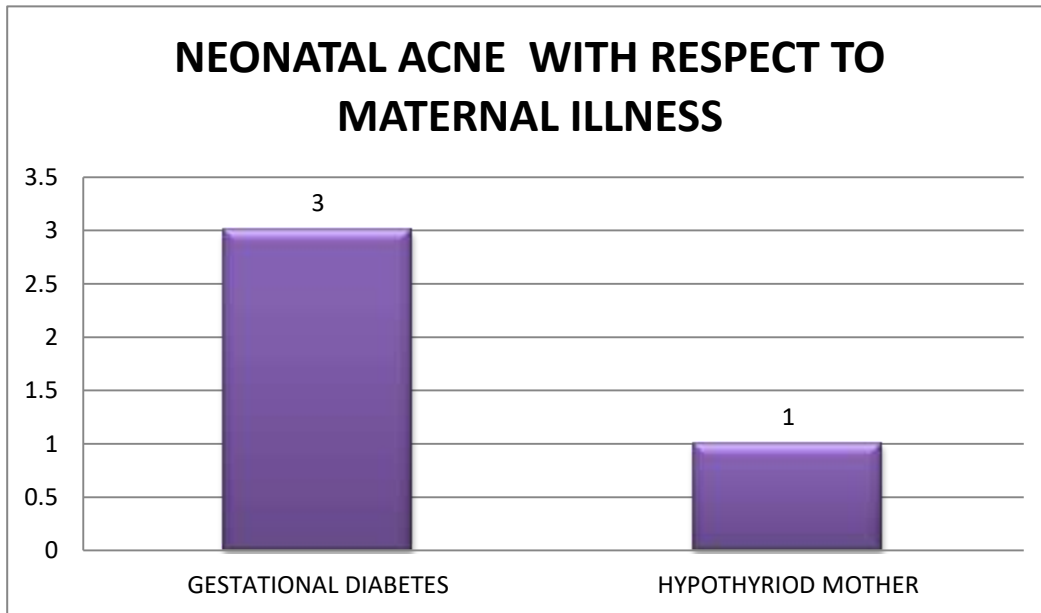
We studied 4 cases, out of which 2 were male and 2 were female babies with 3 full term and 1 preterm

Graph 14



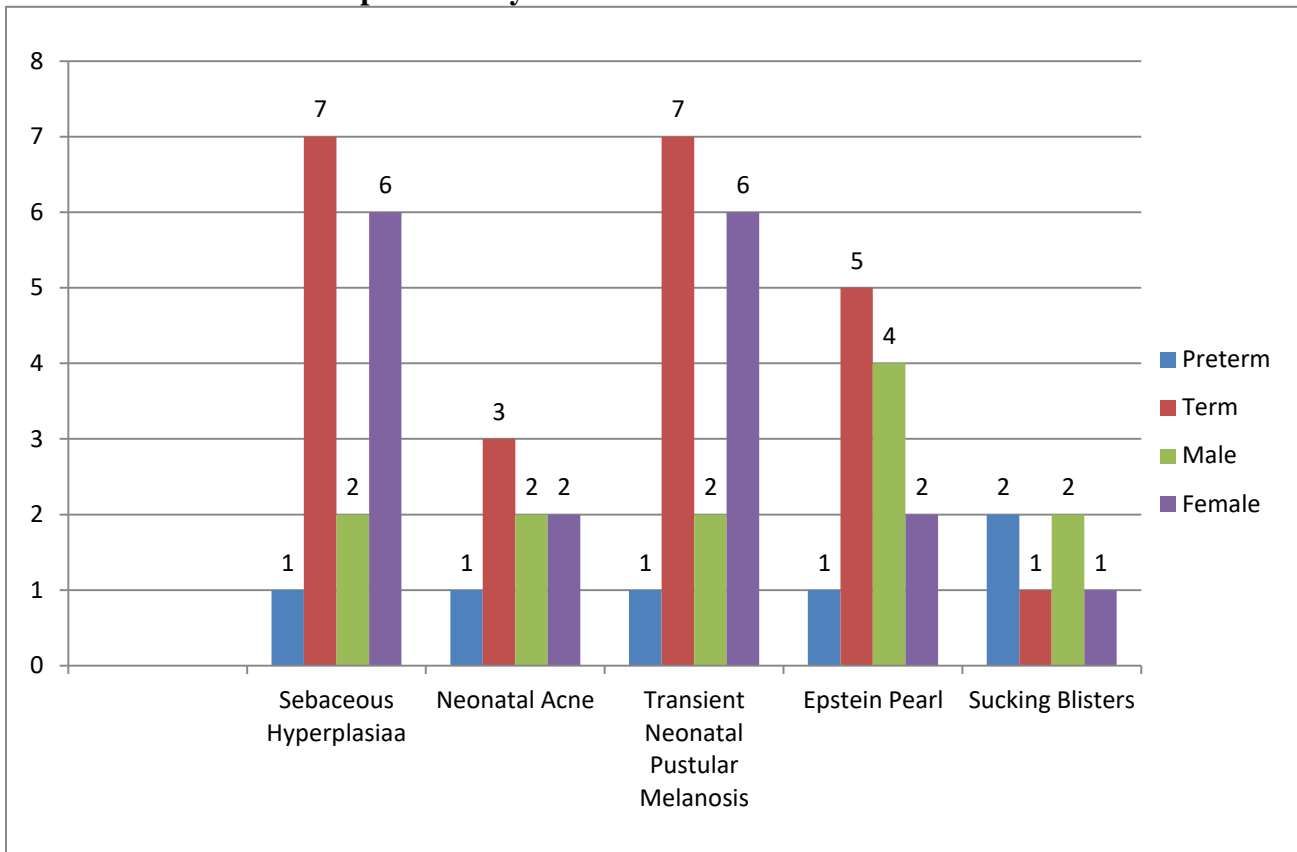
Out of 4 Neonatal Acne cases 1 was preterm and 3 were Full term

Graph 15



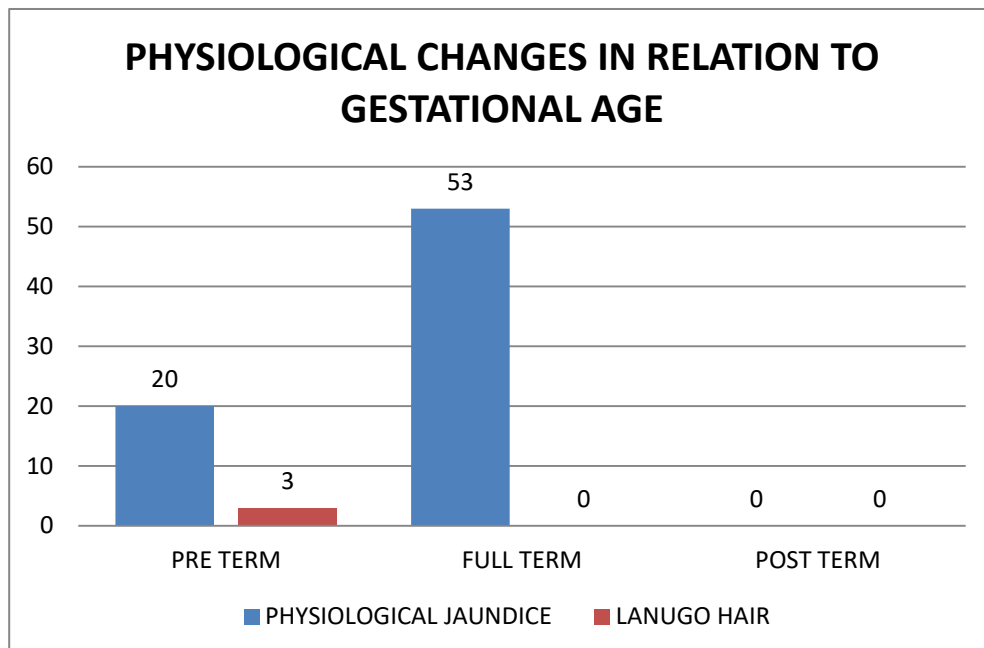
Out of 4 Neonatal cases, 3 babies' mother is having gestational diabetes and 1 having hypothyroid

Graph 20 Analysis of other Transient Skin Lesions



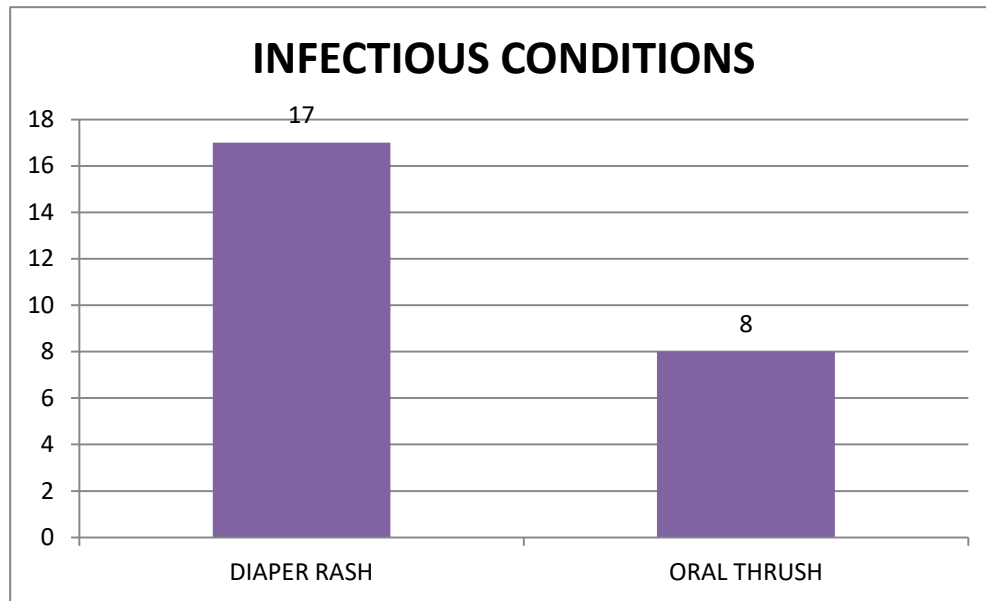
Out of 311 dermatosis in 300 cases, we found 8 sebaceous hyperplasia, 4 neonatal acne, 3 sucking blisters, 8 transient neonatal pustular melanosis and 6 Epstein Pearl babies. Out of which 6 were in preterm babies, 23 were in term babies with 12 males and 17 female babies.

Graph 21 PHYSIOLOGICAL CHANGES IN RELATION TO GESTATIONAL AGE



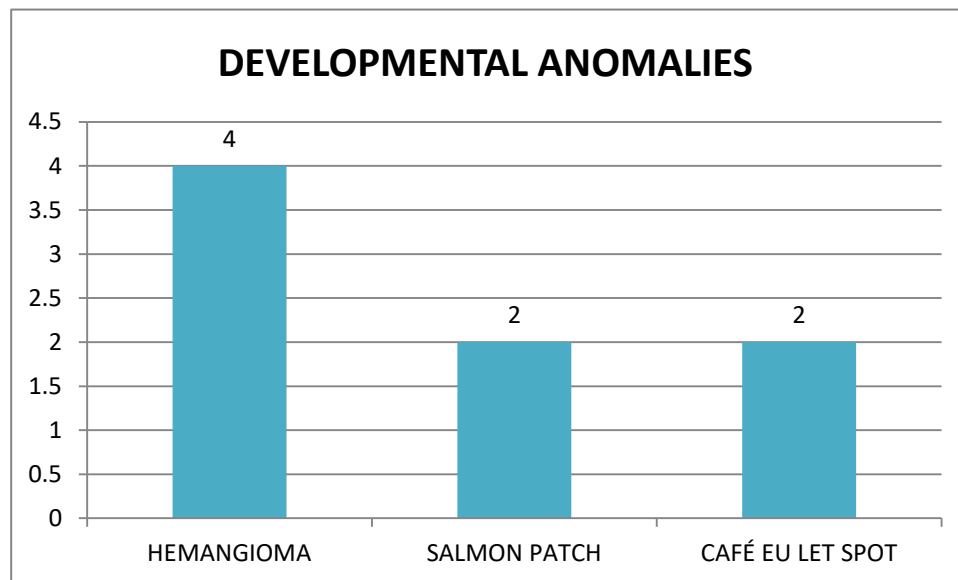
Out of 126 case 73 physiological jaundice, 50 acrocyanosis and 3 lanugo hair. Out of 126, 93 were full term and 23 were in preterm. Most of the physiological jaundice appeared on day 3 of life and persisted for 3 to 7 days. Acrocyanosis appeared at birth and resolved within few hours of life. Lanugo hair was present in 3 preterm cases.

Graph 22 INFECTIOUS DISEASE



25 cases of infectious condition obtained, out of which 17 were having Diaper rash and 8 were having oral thrush. All the 25 cases were full term ,with males 7 and females 18 .

Graph 23



8 babies were having developmental anomalies, out of which 4 Hemangioma, 2 salmon patch and 2 café au lait spot. Among 8 cases, 5 females and 3 males with 3 preterm and 5 term babies.

Discussion

The transient skin lesions were the commonest skin conditions in our study. Total of 311 transient lesions from 300 neonates noted in the study. ETN was seen

in 130 neonates (43.3%). Out of which 124 cases (95.4%) were term, 2 cases (1.5%) were preterm and 4 cases (3.1%) were post term .Out of 130 cases, 77 were females and 53 were males. Out of the total 130

cases of ETN, 83 cases were recorded on second day of life, 46 were recorded on day 3 and 1 case was seen on 4th day of life. All the ETN cases resolved within one week of life and few within 2 weeks of life. In our study the predominance of Erythema Toxicum was significantly higher in low birth weight babies i.e. 62% out of total SGA babies. M Aneesh 35 et al recorded 43.6% incidence of ETN cases which is comparable to our study. Nobby 44 et al reported an incidence of 153 cases of ETN out of 500 i.e. incidence of 30.6%. K Dash 42 et al recorded 27% incidence of ETN and there was no record of it in pre-term infants. Mongolian spots were the second commonest transient lesions seen in our study. A total of 121 cases (40.3%) were recorded. Out of them, 90 were on lumbosacral area and 31 were at trunk region. Out of the 31 cases, 19 extended over upper back and 12 covered whole of upper back and deltoid area. In our study we noted that 90 cases were seen in male babies and 31 were females. Most of the babies were full term with 96 cases and 25 in preterm cases. In mature male newborns, the prevalence of combined occurrence of Erythema Toxicum and Mongolian spot is found to be significantly higher. The frequency of Mongolian spots in our study is almost comparable with those of other Indian studies. There was no relation to maternal illness or mode of delivery. M Aneesh et al recorded 54.5% of incidence of Mongolian spot. While in a study conducted by Shilpa Gudurpenu et al 37, the incidence reported is only 10.5% which is lower than our study. Baruah MC 43 et al studied 500 cases and found Mongolian spots in 392 babies - an incidence of 78.4%. Nanda A et al 45 observed 62.2% incidence of Mongolian spots in 900 consecutive Indian newborns, which is comparable to our study findings. We studied 11 (3.6%) cases of miliaria. Out of these 2 (18.2%) were pre-term, 9 (81.8%) were full term. Incidence of Miliaria is 3.6%. Out of 11 cases, 8 were M. crystallina type and 3 cases were M. rubra type. In our study out of 11 cases, 2 cases were secondary to radiant Warmer (heat) exposure and other cases were not associated with phototherapy or warmer exposure. Majority of the lesions resolved by first week of life. Incidence was more in males. Shilpa Gudurpenu et al recorded 7 (3.2%) cases of miliaria which is comparable to our study. While M Aneesh et al reported 7.1% incidence of miliaria. K Dash et al

recorded 24% incidence of Miliaria. Nobby et al recorded 22 (4.4%) cases of M. crystallina and 13 cases 2.6% of M. rubra. which is also comparable to our study. Baruah MC et al recorded 66 out of 500 i.e. 13.2% cases of miliaria. Of these 48 (72.7%) were miliaria rubra and 18 (27.3%) of M. crystallina. Incidence of TNPM is 8 (2.6%) cases in our study. Higher incidence is seen in females and full term babies. Shilpa Gudurpenu 4 et al recorded 15 (6.8%) incidence of TNPM while M Aneesh et al recorded 1% incidence of TNPM. Flavia peireira 2 recorded 3.7% incidence which is almost comparable to our study. We recorded total 20 (6.6%) cases of milia over forehead, nose and cheeks. Out of 20 cases of milia, 2 were seen in preterm neonates and 18 were seen in term neonates. Site of occurrence is more in forehead followed by cheeks and nose. Incidence was more common in females. Shilpa Gudurpenu reported an incidence of 6.8% which is comparable to our study. While M Aneesh et al recorded milia (40.9%) out of 114 babies. Flavia Peireira et al recorded milia with an incidence of 17.3% which is higher than our study. 6 neonates (2%) had Epstein's Pearls in our study. Incidence is more in males. 5 babies seen in term babies and 1 in preterm. M Aneesh et al recorded 53.6% cases in his study while K Dash et al noticed Epstein's pearls in 38% with more cases in term babies. Lower incidence in premature infants correlates with our studies. The incidence of Epstein's pearls varied from 43% to 64.3% in various studies and was more among whites. Our incidence is lower than other studies. We studied 8 cases (2.6%) of sebaceous hyperplasia, out of which 1 was in pre term and 7 in full term, incidence is more in girls. Shilpa Gudurpenu reported 6.8% incidence of sebaceous hyperplasia while K Dash et al in his study found 22% incidence of sebaceous gland hyperplasia. Most of the previous studies show high incidence compared to our study. 4 cases (1.3%) of neonatal acne were seen out of which incidence is more in girls. And those mothers with Antenatal risk factors with GDM and Hypothyroidism. M Aneesh et al in his study reported 3.6% incidence of neonatal acne while Baruah MC et al recorded only one case in 500 cases which is in concordance with our study. We recorded 3 cases (1%) with sucking blister. In 1 newborn it was located on lower lip while in 2 neonates, it was on wrist. 2 were found in preterm while 1 in full term baby. Nobby et

al reported 0.6% incidence of sucking blister which is in concordance to our study. Flavia et al reported 0.4% incidence of sucking blisters which is comparable to our study. M. Aneesh et al reported 41.8% incidence with sucking blisters which is comparatively higher to our study. We recorded 126 cases (42%) of physiological skin changes out of 300 neonates, of which 33 were in pre-term, and 93 were in full term. Prevalence of Acrocyanosis is found to be more for Normal weight, Term female babies while Physiological jaundice is found to be prevalent in Normal weight preterm female babies. Physiological jaundice of newborn was recorded in cases 73 babies (57%). It was more common in term neonates 93 (73%). Prevalence of ETN is more among the total preterm babies in our study. Flavia et al reported an incidence of 1% in his study. While Najib, Khadije Sadat et al [47] reported physiological Jaundice in 60% of term infants and 80% in preterm babies which is in concurrence to our study. K Dash et al recorded incidence of 20%, 14 full term and 6 preterm icteric babies in a study of 100 babies. Nobby et al recorded 103 out of 500 i.e. 20.6% cases with no reference to gestational age. Lanugo hair was seen in 3 cases (2.4%). In our study incidence of LH was seen only in preterm babies. Flavia Pereira et al [2] recorded 38.9% incidence of lanugo hair. K Dash et al have seen 7% cases, with higher percentage in premature cases, which is comparable to our study. In our study, we recorded 25 cases (8.3%) infectious skin lesions of which 17 cases (68%) were Diaper rash and 8 (32%) cases were with Oral thrush. The prevalence of Diaper rash and Oral thrush is higher in vaginally born normal birth weight female babies. All diaper rashes seen in full term babies with females 15 and 2 males with an incidence of 5.6%. M. Aneesh et al [3] recorded 13.7% incidence of diaper rash. Oral thrush was seen in 8 cases (2.6%), out of which 6 were males and 2 were females with all 8 cases in full term babies in our study. M. Aneesh et al in his study reported 2.7% incidence of oral thrush which is comparable to our study. Vanessa Zagne and Fernandes et al [40] recorded 0.49% cases of oral candidiasis in 203 babies born within 72 hrs of life. We did not record any case of viral or parasitic skin infections, which are rarely reported in other studies too. Developmental anomalies were seen in 8 Neonates (2.6%). Developmental anomaly, Café au lait spot is predominantly higher in underweight term

female babies while Salmon patch is high in low birth weight term male babies. Out of which hemangioma was more with 4 cases (50%) followed by salmon patch 2 (25%) and café au lait spot in 2 cases (25%). Out of 4 cases of Hemangioma recorded (1.33%) 2 were in preterm and 2 in full term with female 3 and male 1. Flavia Pereira et al recorded only 0.4% incidence of hemangioma. Incidence of salmon patch is 2 (0.6%) in our study. Incidence noted only in females and in full term babies. Shilpa Gudurpenu et al in the study reported 4.1% incidence of salmon patch while Flavia Pereira et al recorded Salmon Patch with an incidence of 20.4%. Vanessa Zagne and Fernandes et al recorded salmon patches in 36.45% newborns. Out of 2 café au lait spots 0.6%, 1 case was seen in preterm and 1 in term and all 2 cases seen in females. Flavia et al recorded 1.8% incidence of café au lait spot. While Vanessa Zegna et al recorded 3.45% of café au lait spot.

Conclusion

Mongolian spot is significantly higher in normal birth weight male babies. In mature male newborns, the prevalence of combined occurrence of Erythema Toxicum and Mongolian spot is found to be significantly higher. Erythema Toxicum was seen significantly higher in low birth weight babies even though its occurrence is similar in both male and female newborn. Lesions like Sebaceous hyperplasia, Neonatal acne, Miliaria, Sucking blisters, Transient neonatal pustular melanosis and Milia was seen predominantly in premature female neonates.

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