INTRODUCTION
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Infections in newborn still remain a major problem despite advances in chemotherapeutic agents. The long held concept of the neonate as an "immunologically null" subject is no longer appropriate. A corner stone of the present century lies in the enormous advances made by umpteen workers in the field of immunology. Strange though it may seem, not many immunologists have delved to study the immunological status of the newborn, specially in certain neonatal disorders known to affect their immunological profile. The study thus throws challenge to most pioneer workers in the field, not only in unearthing the intricate mechanisms of neonatal defence, but also in evaluating the extent to which the neonate can combat the challenges of environment, after a relatively secure place in the mother's womb. Although neonatal period is the most significant period in the human life yet not much work has been done so far to know the effect of various disorders over the immunological status of the newborn. The present study has been aimed towards this need and is a small effort to unveil the challenge faced by immunologists.
With the advancement of immunology, one could find immunological explanation for every disease and further diagnosis of the disease by implication of the same. There is a paucity of quantitative data on the levels of immunoglobulins and components of complement in serum of the healthy newborn babies and variation in their status in different diseases. Neonatal period is the most vulnerable period in the human life to acquire various infections. What is the effect of various diseases on neonates and their immunological status? Why all neonates do not respond in a similar fashion to the same disease? These few questions still remain an enigma.

Materno-foetal immunologic relationship is perhaps unique in biological world. We see that mother provides all essential immunoglobulins to the newborn, to survive till it starts producing its own immunoglobulins in the form of passive immunity which it acquires transplacently and through colostrum.

Studies done so far, have shown that there is a state of diminished immune responsiveness of a normal healthy newborn baby, with subsequent impaired resistance to various antigens and micro-organisms in the extra-uterine environment. The decreased state of immunological function is seen to be related to the depressed specific and non-specific immune mechanisms in newborns. During
intra-uterine period, fetus generally lacks antigenic challenge but has the ability to respond, however there are maturation deficiencies in complement activity, immunoglobulin content and defective phagocytic response leading to diminished inflammatory response in the newborn.

Besides uncompromised non-specific immune status in this age, certain factors like low birth weight, which may be accounted by prematurity or intra-uterine malnutrition or both, may further adversely affect the developing immune apparatus of the newborn. Fetal malnutrition is also seen to affect the post-natal immune competence by hampering the development of the thymic dependent areas which are responsible for cellular immunity. The depressed state of immune responsiveness in these newborns thereby pre-disposes them to various infections which in turn may alter their immunological profile and this immunological response may determine the course of the disease.

Although unconjugated bilirubin has long been known to have toxic effect on various body tissues specially the brain cells, only meagre attention has been drawn on its effect on the immune apparatus of the newborn. Studies done in the recent past have unravelled a depressed state of immune responsiveness of the newborn infant following neonatal hyperbilirubinemia. The awareness
that this depression may be long lasting prompted the authors in highlighting the importance of an early therapeutic intervention and subsequent follow-up.

In India there are more chances of exposure to infections of a neonate. Also the health of the mother and environment is responsible for the various neonatal problems in the newborn. To know the effects of various infections on the neonates and their response in relation to these stimuli, it is essential to assess the immunological status of the newborn.

The state of the art concerning the complement system is tenuous. Although much progress has been made in the past 15 years, an extra-ordinary amount is still unknown about the basic immuno-chemistry of this system and its relationship to human disease, specially in the neonates. Research in this area is cumbersome with many inexact and semi-quantitative methods. To our knowledge, no formal study of the activity as C₃ complement of complement system in the serum of neonates with hyperbilirubinemia, small for gestational age and neonates having infection has been reported. Therefore, in view of the possibility of increased infection rate in these groups of neonates, this aspect deserves attention.

The immune state of a neonate forms the baseline of any study of immune response in man, as active immune
responses become operative immediately after exposure to
the antigenic stimuli from environment. In this country,
these stimuli become operative quite early, as an average
neonate has a greater chance of an exposure to infection
fairly early in life and hence it is mandatory to know
the immune status of the newborn to decrease the morbidity
and mortality, by finding the high risk newborns and by
providing them special care.

Present work is directed at studying mainly the
humoral immune response in the normal newborn babies and
those suffering from some common neonatal disorders.

Following are the aims of the present study:

1. To assess humoral and complement activity of normal
   full term healthy newborn babies.

2. To assess humoral and complement activity in low birth
   weight babies, which includes both appropriate for
   gestational age premature babies and small for date
   babies suffering from intra-uterine malnutrition.

3. To assess humoral and complement activity in cases of
   neonatal hyperbilirubinemia.

4. To assess humoral and complement activity in cases of
   neonatal infections.

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