

REFERENCES

1. Brown WR, Booj WH. Ethnic group differences in plasma bilirubin levels in full-term, healthy Singapore newborns. *Pediatrics* 1965, 36: 745-751.
2. Anand JS, Magotra ML. Neonatal jaundice-its incidence and etiology. *Indian Pediatr* 1978,15: 155-160.
3. Buchan PC. Pathogenesis of neonatal hyperbilirubinemia after induction of labor with oxytocin. *Br Med J* 1979, 2: 1255-1257.
4. Bdggs TR Jr, Bishop H. Neonatal hyperbilirubinemia associated with obstruction of the small bowel. *J Pediatr* 1965, 66: 349-356.
5. Moore LG, Newberry MA, Freeby GM, Cernic LS. Increased incidence of neonatal hyperbilirubinemia at 3100 meters in Colorado. *Am J Dis Child* 1984, 138: 157-161.
6. Leibson C, Brown M, Thibodeau S, *et al.* Neonatal hyperbilirubinemia at high altitude. *Am J Dis Child* 1989, 143: 933-937.
7. Bajpai PC, Misra PK, Agarwal M, Engineer AD. An etiological study of neonatal hyperbilirubinemia. *Indian J Pediatr* 1971, 38: 424-429.
8. Singh M, Narayanan P. Effect of phenobarbitone on physiological jaundice. *Indian Pediatr* 1974, 11:43.
9. Merchant RH, Merchant SM, Babar ST. A study of 75 cases of neonatal jaundice. *Indian Pediatr* 1975, 12: 889-893.

Cord Blood Cholesterol in Term and Preterm Newborns

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Increasing awareness about the origins of the atherosclerosis in early life has

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*Received for publication: March 7, 1994;
Accepted: July 15, 1994*

renewed interest in determination of various lipid fractions in the pediatric age group. Atherosclerotic cardiovascular diseases are the major causes of morbidity and mortality in adult population of the industrialized societies. Several investigators believe that the atherosclerotic lesions may have its genesis in the childhood(1). Studies(2) have suggested that hypercholesterolemia can be diagnosed at birth by estimation of total cholesterol or low density lipoproteins (LDL) in umbilical cord blood.

Cord blood cholesterol estimation is logistically feasible because of the ease with which cord blood can be obtained at birth and its simple method of detection(3). The present study was undertaken to determine the normal values of umbilical cord blood cholesterol in the local population and its

correlation with gestational age, birth weight and sex of the baby was established.

Material and Methods

One hundred newborns delivered at Prince Bijay Memorial Hospital, Bikaner, were randomly selected over a period of one and a half years for this study. A thorough clinical examination of newborns was carried out. There was no family history of coronary artery disease, hypertension and diabetes mellitus. The gestational age was determined using the criteria laid down by Dubovitz *et al.*(4). Cord blood samples were collected from the placental end of the cord just after the delivery of the baby and cholesterol was estimated by the method of Zlatkis *et al.*(5). Serum cholesterol levels were analysed statistically by using Chi square (χ^2) test.

Results

Of total 100 newborns, term and preterm were 78 and 22, respectively. Seventy seven babies weighed >2.5 kg and 23 were of <2.5 kg. Boys and girls were 56 and 44%, respectively.

The mean cord blood cholesterol (± 1 SD) level was 90.4 ± 18.2 mg/dl with a range of 51.4-126 mg/dl. In term babies, the mean level was 96.2 ± 15.1 mg/dl as compared to 69.5 ± 10.9 mg/dl in preterm ($p < 0.001$). The mean levels were 96.1 ± 15.0 and 66.8 ± 16.0 mg/dl in babies weighing >2.5 and <2.5 kg, respectively ($p < 0.001$). Serum cholesterol values showed significant positive correlation with gestational age (*Fig. 1*) and birth weight (*Fig. 2*). The mean cord level of cholesterol in boys was 88.7 ± 19.1 and in girls was 91.1 ± 17.2 mg/dl ($p > 0.05$).

Discussion

In pediatric practice, hyperlipidemia

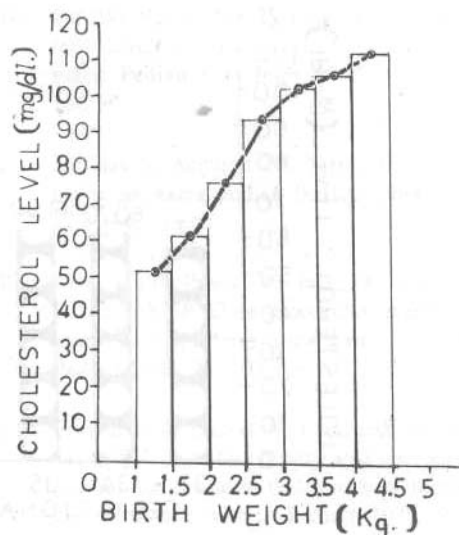


Fig. 1. Mean cholesterol levels in relation to gestational age.

seldom presents as a clinical problem(6). Nevertheless, hyperlipidemia is probably not uncommon. Its early recognition may present or delay premature onset of ischemic heart disease and other form of atherosclerotic changes in many adults. It is indeed intriguing that children with hypercholesterolemia are remarkably sensitive to diet during infancy and later childhood(7). A complete lipid profile is not feasible as a screening test in many of the institutions and is also quite expensive. Kwitrovich *et al.* (8) found that by measuring the concentration of LDL, the diagnosis can be predicted reliably in newborns with affected parents. LDL cholesterol though more sensitive is only possible at highly specialized centres. Simple cholesterol estimation, therefore, is still retained as a preliminary screening test.

Regional variations and scanty data on cord blood cholesterol levels prompted us to

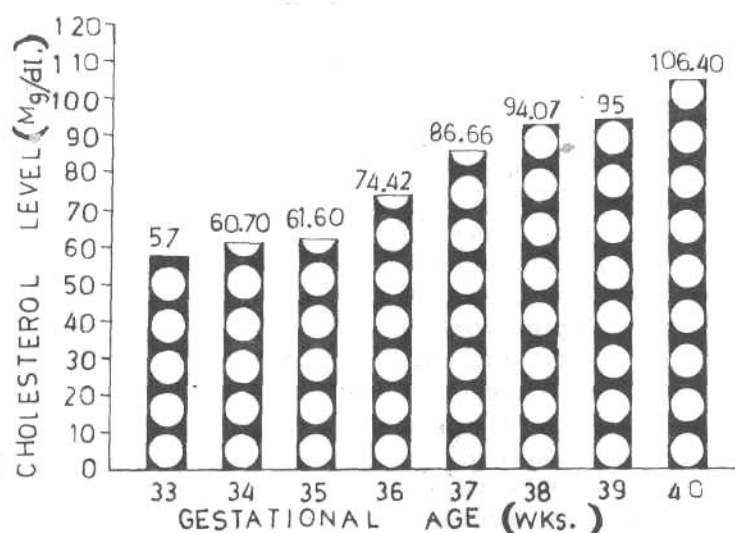


Fig. 2. Mean cholesterol levels in relation to birth weight.

find the normal values in our local population. In this study, the serum cholesterol level in unselected 100 newborns was 90.4 ± 18.2 mg/dl. Similar findings have been reported by others(9-11). However, Malhur *et al.*(12) reported higher values in 56 newborns, *i.e.*, 105.3 ± 17.1 mg/dl. A positive correlation between cord blood cholesterol and gestational age was observed by earlier workers(12,13) while no such correlation was found by Haridas *et al.*(11). In the present study, maturity of baby showed significant positive correlation with cord blood cholesterol levels ($p < 0.001$).

A significant positive correlation was also found between cord blood cholesterol levels and birth weight, the same has been observed by Mathur *et al.*(12). Sex of the baby did not influence the cholesterol values as has been previously observed(10,12).

We recommend further evaluative studies to establish norms for various age

groups. As prevention of undesirable consequences of hypercholesterolemia at an early age seems more logical, a follow up of this cohort for next 2-3 decades will be aimed.

REFERENCES

1. Kannel WS, Castelli WP, Gordon T, Mehamara PM. Serum cholesterol, lipoprotein and the risk of coronary heart diseases. *Ann Intern Med* 1971, 74: 1-5.
2. Evans GR, Taylor KG. Pediatric origin of atherosclerosis. *J Appl Med* 1988. 4: 453-479.
3. Barnes K, Nesterl PJ, Pryke ES, Whyte HM. Neonatal plasma lipids. *Med J Aust* 1972, 2: 1002-1005.
4. Dubovitz LMS, Dubovitz V, Goldberg C. Clinical assessment of gestational age in the newborn infant. *J Pediatr* 1970, 1: 77-82.
5. Zlatkis A, Zak B, Boylo AJ. A new method for estimation of serum

- cholesterol. *J Lab Clin Med* 1953, 44: 486-492.
6. Majahan MN, Sainani GS. Physiology and pathophysiology of hyperlipidemias. *J Appl Med* 1989,15: 303-305.
 7. Verma M, Singh T. Primary prevention of atherosclerosis: responsibility of the pediatrician. *Indian Pediatr* 1992, 29: 1471-1478.
 8. Kwiterovitch PO, Levy RI, Fredrickson DS. Neonatal diagnosis of familial type II hyperlipoproteinemia. *Lancet* 1973, 1: 118-122.
 9. Cristensen H. Lipid in cord blood serum and free fatty acids in plasma in healthy newborn term infants. *Acta Pediatr Scand* 1974, 63: 711-714.
 10. Pai PM, Bakshi MJ, Pradhan AG. Cholesterol levels in cord blood of normal neonates. *Pediatr Clin India* 1975, 10: 185-186.
 11. Haridas N, Acharya PT. Serum lipid status in neonates. *Indian Pediatr* 1984, 21: 327-334.
 12. Mathur PP, Prasad R, Jain SK, Pandey DH, Singh SP. Cord blood cholesterol in term and preterm newborns. *Indian Pediatr* 1986, 23: 103-106.
 13. Friedman Z, Danon A, Lamberth EL Jr, Mann WJ. Cord blood fatty acid composition in infants and in their mothers during the third trimester. *J Pediatr* 1978, 92: 461-466.

Profile of Malignant Lesions Amongst Children in North Bengal

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Ethnic differences play a significant role

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*Received for publication: September 3, 1992;
Accepted: August 5, 1993*

in the incidence, type, response to therapy and mortality rate of some malignant neoplasm. For example, the Chinese Americans revealed a significantly lower mortality in leukemia but a higher mortality rate in non-Hodgkin lymphoma (NHL) than for the Caucasian population(1). It is well known that acute lymphoblastic leukemia in black children is less responsive to therapy than in white. Keeping this in mind and also noticing a very high incidence of retinoblastomas and acute leukemias among children of different ethnic groups in the sub-Himalayan region of North Bengal, this study was conducted.

Material and Methods

The study was conducted retrospectively among children of less than twelve years of age, in the Department of Pathology of North Bengal Medical College, Darjeeling from January 1983 to June 1992. The catchment area of this Institute consists