Background

The leading global epidemic Human Immunodeficiency Virus (VIH) infection has been well-documented[1]. It is transmitted from an infected person to an uninfected one by two ways: horizontal and vertical transmission (VT), which is mother-to-child transmission (MTCT) and is acquired at one or more of the following stages: transplacentally in the uterus during pregnancy, perinatally during the process of labor and delivery and postnanatally during breastfeeding[1,2].

Objective

To demonstrate that adecquate management at each of these three moments reduces the MTCT[2].

Methods

A observational-retrospective study was carried out at Maternidad Matilde Hidalgo de Procel in Guayaquil, Ecuador to detect the prevalence of serorevertors newborns of VIH who received prophylactic antiretroviral treatment at birth, formula milk and whose mothers got administered antiretroviral therapy (ART) during pregnancy or partum according to the established schemes 3[,4]. These vertically exposed infants were followed up by an accredited pediatrician by the National Program of HIV-AIDS to receive special care during at least the first 18 months.

Results

One hundred (100) pregnant women were enrolled. ART was started between the 14th and 28th pregnancy week in a 41 %, after the 28th weeek in 24 % and during labor or delivery in 35 %. One hundred percent of pregnant women received ART intrapartum. One hundred percent of the newborns received antirretroviral prophylaxis from 6 to 8 hours old for 4–6 weeks according to the applied scheme. In both, mothers and children, the most frequently administered regimen was the C with 48 % based on zidovudine. One hundred percent of the newborns was fed by formula milk and 100 % was serorevertor of HIV.

Conclusions

This study shows that MTCT was 0 % due to the seroreversion in children at =18 months which represents that the treatments and properly applied procedures reduce the MTCT to zero and place Ecuador at the level of developed countries where the VT has been decreased at 1-2 %[5,6].

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An Audit of Thyroid Function Testing Among Infants with Down Syndrome Over a Four Year Period

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Introduction

Infants with Down Syndrome (DS) have an increased risk of thyroid dysfunction and congenital hypothyroidism.[i] [ii] [iii]. Most countries have adapted TSH based screening for Congenital Hypothyroidism using a heel prick test[iv],[v] Irish and International guidelines recommend screening for thyroid dysfunction in Down Syndrome with the Newborn Screening Programme and repeating serum TSH and T4 at 6 months and annually thereafter.[vi]

Objectives

1. To determine the percentage of infants with Down Syndrome who undergo inappropriate thyroid function tests in the first three months of life. 2. To implement a pre-discharge checklist for neonates with DS.

Methodology

All neonates born with Down Syndrome between 1/1/2012 and 1/9/2016 were included. Blood results were reviewed retrospectively on the Hospitals APEX software system. If thyroid function testing was preformed before 3 months of age, charts were reviewed for an indication. The standard was based on the 'National Guideline for the Medical Management of Children and Adolescents in Ireland with Down Syndrome'. This states that Newborn Screening is an adequate screen for thyroid dysfunction in DS and venous thyroid function testing be carried out at least once every two years from their first year. A standard of 90 % was set.

Results

One hundred babies with Down Syndrome were included. 40 % (n = 40) had serum thyroid function tests. 4 % had a maternal history of thyroid dysfunction and 4 % were repeated as requested by the National Newborn Screening programme. Thirty-two percent had no indication. Six of the 32 had abnormal repeat TSH but all had normal T4 levels.

Conclusion

Thirty-two percent had inappropriate thyroid function tests. This means unnecessary cost to the hospital, a poor use of time and staff resources taking the blood and an unnecessary physical and emotional burden to the patient and their parents. This was below the standard set. A checklist for all children diagnosed with Down Syndrome has now been introduced and this audit will be repeat in one year time.

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Prediction of Hyperbilirubinemia in Term Infants

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Background and aims

Recognition of neonates with high risk for significant hyperbilirubinemia is important. The aim of this study was to investigate the risk factors for significant hyperbilirubinemia in term infants.

Methods

A prospective cohort study was conducted to investigate the effects of birth weight, gestational age, sex, mode of delivery and feeding, glucose-6-phosphate dehydrogenase deficiency, variant UDP-glucuronosyltransferase 1A1 (*UGT1A1*) gene, and solute carrier organic anion transporter 1B1 (*SLCO1B1*) gene on hyperbilirubinemia. The PCR- restriction fragment length polymorphism (RFLP) method was applied to detect the known variant sites in the *UGT1A1* and *SLCO1B1* gene. Significant hyperbilirubinemia was defined as a bilirubin level exceeding the hour-specific phototherapy threshold. We analyzed the risk factors for significant hyperbilirubinemia using univariate logistic regression models.

Results

Totally 293 term infants (144 males and 149 females) were enrolled in this study. Thirty one (22 males and 9 females) had significant hyperbilirubinemia. The statistically significant risk factors for jaundice were G6PD deficiency (37.38; 95 % CI, 4.58 to 305.22; $P = 0.001$), the 211 G to A variation in the *UGT1A1* gene (3.09; 95 % CI, 1.23 to 7.74; $P = 0.016$), vaginal delivery (3.36; 95 % CI, 1.12 to 10.05; $P = 0.03$), breast feeding (4.91; 95 % CI, 1.64 to 14.70; $P = 0.004$), male (2.89; 95 % CI, 1.104 to 7.55; $P = 0.031$) and gestational age (0.46; 95 % CI, 0.29 to 0.73; $P = 0.001$).

Conclusion

The infants who are G6PD deficiency, carry the 211 variants in the *UGT1A1*, vaginal delivery, low gestational age, male and breast feeding are at high risk to develop severe hyperbilirubinemia.

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Bilistick® System as a reliable, cost-effective tool for predicting the need of treatment for hyperbilirubinemia in Low Middle Income Countries

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Background

In many Low Middle Income Countries, the access to laboratory support to estimate promptly bilirubin levels in jaundiced newborns is very difficult. This results in a delayed assessment of potentially dangerous jaundice increasing the risk of kernicterus. Implementation of inexpensive and simple devices to evaluate hyperbilirubinemia and treatment needs are essential to prevent neurological damages. We performed a multicenter study in 21 hospitals serving ethnically different populations distributed in Indonesia (7), Vietnam (9), Nigeria (4) and Egypt (1) to evaluate the assessment of the low cost Point-of-Care bilirubin assay Bilistick® System (BS) in determining hyperbilirubinemia and treatment needs according to NICE guidelines.

Objective

To determine the effectiveness of BS to assess neonatal hyperbilirubinemia and indicate the appropriate treatment according to NICE guidelines.

Methods

Blood samples were obtained in 1016 healthy ≥36 weeks of gestation newborns, presenting visual symptoms of neonatal jaundice. Bilirubin level was assessed by laboratory and BS methods; age of the patient was recorded at admission. The accuracy of BS in predicting the need for phototherapy or exchange transfusion treatment was evaluated according to NICE Guidelines for neonatal jaundice management. The bilirubin level obtained by laboratory assay was used as control for treatment prediction.

Results

The prediction of BS to determine need of phototherapy (Table 1A) was accurate in 88 % of the cases, with a sensitivity of 77 %, specificity of 94 %, Positive Predictive Value (PPV) of 87 % and Negative Predictive Value (NPV) of 88 %. BS was accurate in predicting the need for exchange transfusion therapy (Table 1B) in 99 % of the cases, with a sensitivity of 90 %, specificity of 99 %, PPV of 93 % and NPV of 99 %.

Table 1A - Prediction of Phototherapy Treatment using Bilistick® System

| | | NICE Guidelines recommendation according to Lab bilirubin result (Control) (*) | | | | | Prediction analysis by BS | |
		A	B	C	D	E		
NICE Guidelines recommendation according to BS bilirubin result (*)	A	510	34	40	2	0	True negative	619
	B	17	58	36	3	0	False negative	81
	C	18	14	99	56	0	True positive	275
	D	6	3	4	84	3	False positive	41
	E	0	0	0	2	27	TOTAL	1016

Table 1B - Prediction of Exchange Transfusion using Bilistick® System

| | | NICE Guidelines recommendation according to Lab bilirubin result (Control) (*) | | | | | Prediction analysis by BS | |
		A	B	C	D	E		
NICE Guidelines recommendation according to BS bilirubin result (*)	A	510	34	40	2	0	True negative	984
	B	17	58	36	3	0	False negative	3
	C	18	14	99	56	0	True positive	27
	D	6	3	4	84	3	False positive	2
	E	0	0	0	2	27	TOTAL	1016

(*) NICE Guidelines recommendation
A - Negative
B - Repeat bilirubin measurement in 6–12 hours
C - Consider phototherapy and repeat bilirubin measurement in 6 hours
D - Start phototherapy
E - Perform an exchange transfusion unless the bilirubin level falls below threshold while the treatment is being prepared

Conclusion

Bilistick® System is a cost-effective POC bilirubin assay able to accurately predict treatment in the case of neonatal hyperbilirubinemia according to NICE Guidelines recommendations.

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Transport Characteristics of Referred Newborns and Their Outcomes: Indian Perspective

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BACKGROUND

Safe and specialized neonatal transport is a significant determinant for favourable outcome among sick neonates, yet it is often inaccessible and unorganized in developing countries like India. The National Family Health Survey (NFHS-4) shows encouraging improvements in infant and under-five mortality rates in India over last few years, however, the single digit neonatal mortality rate still remains a distant dream.

OBJECTIVES

To determine the transport characteristics and define predictors of mortality among newborn babies referred to a tertiary care centre of North India.

METHODS

This descriptive study was conducted from 15th Jan 2016 to 30th April 2016 and included babies who were referred to a tertiary care centre of North India. Baseline characteristics of referred newborns, transport practices observed, clinical presentation and condition of babies at arrival were recorded. The data was evaluated to define predictors of mortality among the transported newborns.

RESULTS

A total of 301 newborns were enrolled during the study period. The most common indication for transport was prematurity (40 %) followed by need for mechanical ventilation (38 %) and birth asphyxia (28 %). Most neonates were transported by government ambulance services (84 %) followed by private ambulances (12.5 %) and private vehicles (3.5 %). Paramedic personnel accompanied the babies in 85 % of cases. About 60 % babies got referred within 12 hours of life, 73 % in 24 hours and 85 % presented within first week. Ninety babies out of 301 died. Out of these 45 % expired within 12 hour of presentation. Hypothermia at time of admission (P0.0001), shock at presentation (P0.0001) and extreme low birth-weight (P0.0001) were found to be the most significant predictors of mortality among the transported newborns.

CONCLUSION

The presently observed neonatal transport practices in India are suboptimal. Pre-transport stabilization, dedicated teams for neonatal transport and prevention of hypothermia before and during transport seem to be promising interventions to improve neonatal outcomes.

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Pathogen Specific Changes in Core Temperature and Neuro-Inflammation in The Neonatal Rat

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Background

Perinatal infections increase vulnerability of the neonatal brain to hypoxic-ischemic (HI) injury. We recently demonstrated