

Bilirubin Nomogram using Capillary Bilirubin in Korean Newborn Infants

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Introduction

Jaundice of newborn infants is very common, and some present severe hyperbilirubinemia, which may cause neurologic sequelae.

Previously, the AAP has suggested a bilirubin nomogram as a guideline based on Bhutani et al nomogram (which is the only total serum bilirubin, TSB, nomogram)

Recently, a new AAP hyperbilirubinemia guideline suggests a pre-discharge monitoring by transcutaneous bilirubin, TcB (non-invasive), or TSB (invasive).

The AAP guideline were from data inside the USA, thus, different population and ethnicity should be cautious in applying the guideline.

From the study, we tried to delineate Korean ethnic newborn bilirubin nomogram using (less invasive) capillary bilirubin (m-Bil) level.

Methods

A retrospective, cohort study (7 year, July 2015 to June 2022)

Subjects : Inborn infants (≥ 35 weeks of gestational age (GA) and $\geq 2,000$ gram at birth) who have been admitted to Kangwon National University Hospital.

Practice during study period; all newborn have discharge m-bil, m-bil pro re nata with jaundice suspicion, phototherapy started with the 2004 AAP guideline, TSB check before phototherapy.

m-Bil by NEO-BIL PLUS (DAS, Palombara Sabina, Italy)

Data including perinatal factors (gestational age, birth weight, delivery mode, sex, Apgar scores, feeding method, weight nadir, presence of cephalhematoma, phototherapy, et al.) were collected.

Exclusion criteria; congenital anomaly, asphyxia, Coombs positive hemolytic jaundice cases. Bilirubin (m-bil) data after phototherapy were excluded in the analysis

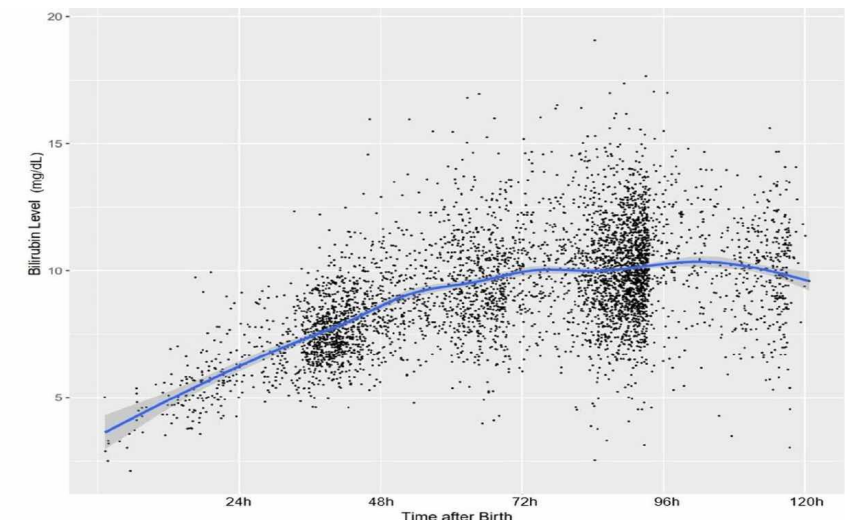
Statistics; SPSS 29.0, R software version 4.3.1. for plotting

Results

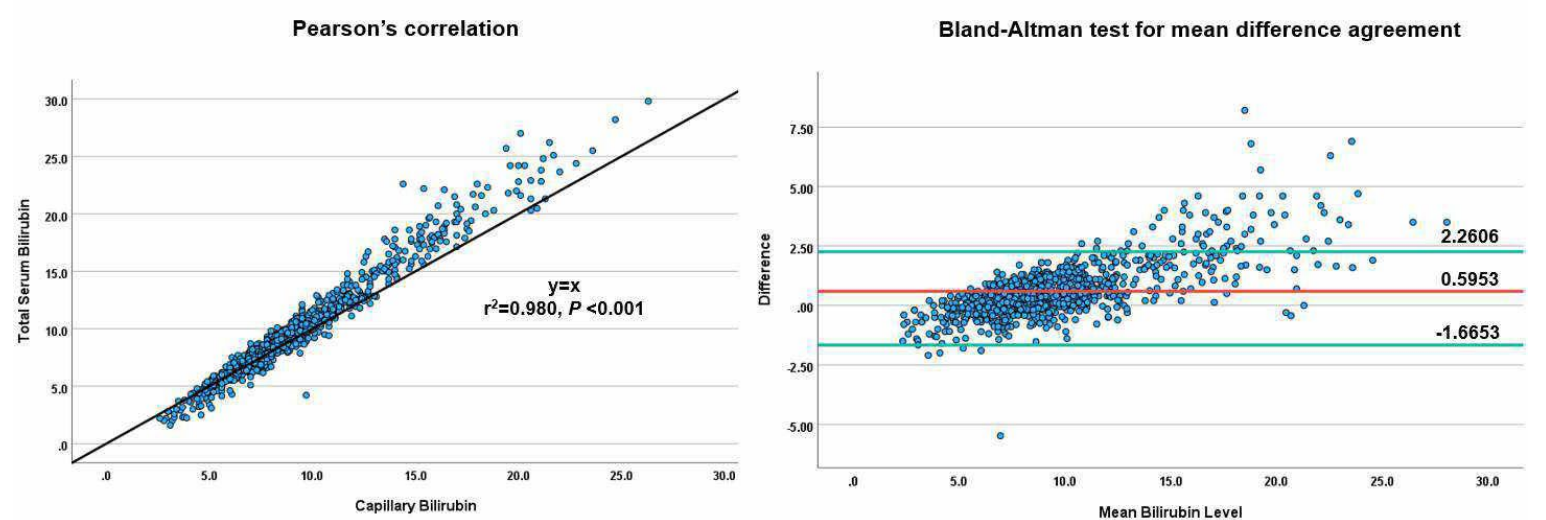
Demographic Characteristics (n=3,358)

Characteristics	Mean \pm SD, n (%)
Gestational age (weeks)	37.4 \pm 1.7
Birth weight (grams)	3,089 \pm 455
Sex (male)	1732 (52)
Delivery mode (C sec)	2317 (69)
Exclusive breast milk feeding	91 (3)
Small for gestational age	579 (17)
Large for gestational age	104 (3)
Cephalhematoma	129 (4)
Phototherapy for jaundice	572 (17)

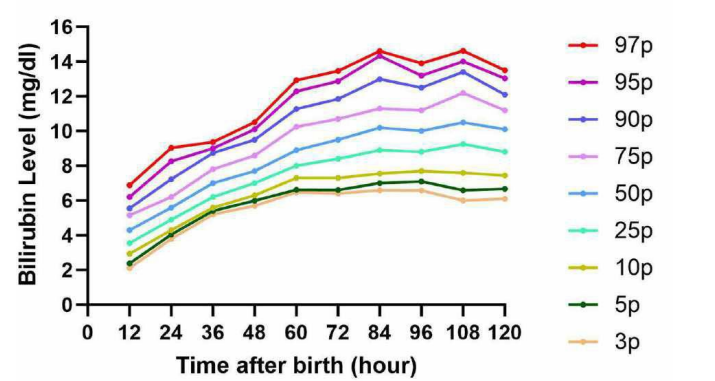
An hour-specific m-Bil plotting



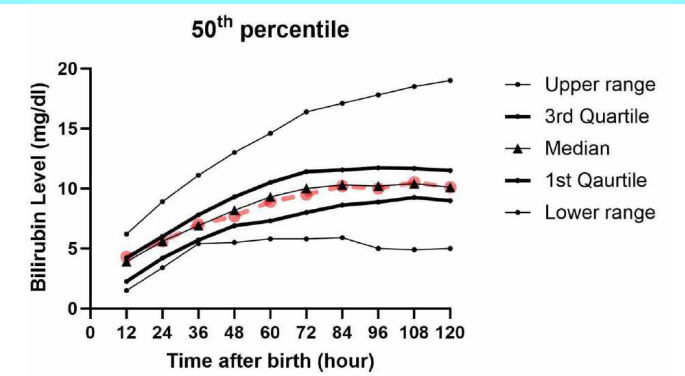
Correlation between TSB and m-Bil



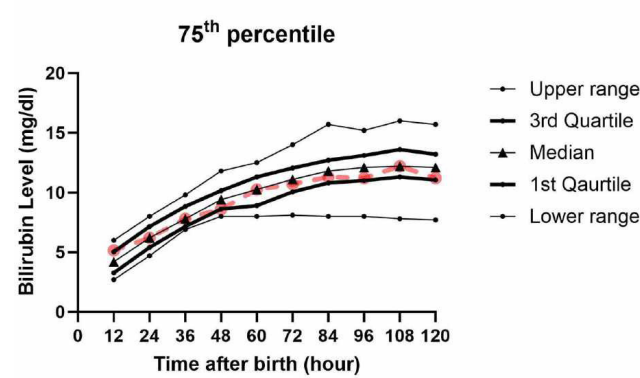
Nomogram using m-Bil by 12h epoch



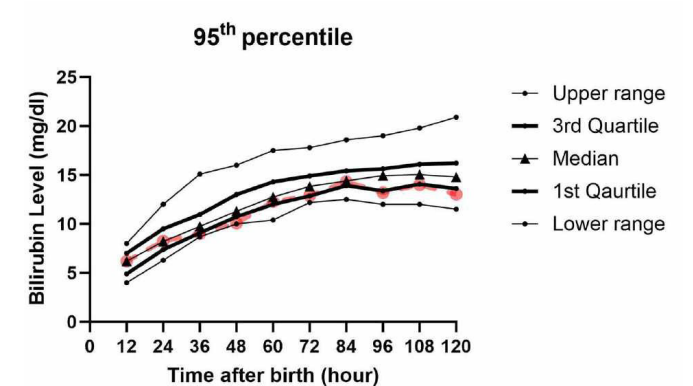
Comparison across population groups (1) 50th



Comparison across population groups (2) 75th



Comparison across population groups (3) 90th



The study group: red dotted line

Discussion

We have created Korean ethnic bilirubin nomogram using capillary bilirubin with 12h interval till 120h after birth in newborn infants over 35 weeks of GA above 2,000 gm at birth.

The nomogram was comparable with other populations' transcutaneous bilirubin nomogram. Although further data may be necessary, this study can be a groundwork as a Korean ethnic bilirubin nomogram.

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