Transcutaneous bilirubinometry in neonates

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In recent years, a new risk model for hyperbilirubinemia has emerged. There are several reasons for this. First, delivery of the health care system to the relatively healthy term or near-term infant and mother has changed, with earlier discharge and fewer routine tests (1). Second, physician awareness of the possibility of kernicterus in this population has changed, requiring increased vigilance (2). Third, the tendency toward demedicalization of the relatively healthy breastfed newborn has created the potential for development of severe hyperbilirubinemia (greater than 350 μmol/L). A recent study from Canada (2) concluded that severe hyperbilirubinemia continues to be observed in term and near-term neonates, with significant morbidity.

Although jaundice occurs in the majority of newborns and most cases are benign, the newborn with severe jaundice must be identified, carefully followed and, if needed, treated appropriately because of the potential toxicity. Capillary collection of blood by heel puncture or blood collection from venous puncture has been the traditional method of screening and monitoring jaundice in neonates (3). This obviously causes pain and discomfort to infants and anxiety to parents. Transcutaneous bilirubin measurements using BiliChek (Respironics, USA) or other similar devices have been used sporadically in many countries, including the United States and Canada, for the screening of jaundiced infants. The clinical practice guideline that was recently published by the American Academy of Pediatrics (4) stated that there is an urgent need to improve the precision and accuracy of measurement of bilirubin in clinical laboratories. The Academy has called for additional studies on the cost-effectiveness and reproducibility of transcutaneous measurements of total serum bilirubin. Jaundice is first seen in the face of a newborn and generally progresses caudally to the body and the extremities. Visual estimation of jaundice will lead to errors; therefore, screening tools have been developed using noninvasive devices, such as BiliChek, to estimate bilirubin levels, and they have proven to be valid. Although studies are limited, they suggest a measurement within 34 μmol/L to 51 μmol/L when compared with serum bilirubin. A study by Jangaard et al (pages 79-83) evaluated the transcutaneous bilirubin device BiliChek by comparing transcutaneous bilirubin values with total serum bilirubin measurements in well term infants, ill term infants and preterm infants admitted to neonatal intensive care units, with and without phototherapy. The study consisted of two phases: in phase 1, 99 healthy, full-term infants who had not received phototherapy had transcutaneous bilirubin measurement performed simultaneously with heel puncture for serum bilirubin measurement. In phase 2, in 56 infants admitted to neonatal intensive care units, a total of 99 transcutaneous readings were performed at the time that serum bilirubin measurements were ordered for clinical reasons. The operators of the BiliChek device were blinded to the serum bilirubin levels. The authors found that transcutaneous bilirubin measurements were reasonably accurate for measuring bilirubin in term, jaundiced infants not undergoing phototherapy and in those receiving phototherapy if the area of skin was patched from the phototherapy. The BiliChek measurements were unreliable for preterm and ill infants.

Jangaard et al should be congratulated for their work. Their study adds to the multiple other studies that are available comparing transcutaneous serum bilirubin measurements with capillary or venous bilirubin collection methods (5-7). Like others, they found that transcutaneous measurement has limitations. For instance, it becomes unreliable after initiation of phototherapy if the skin is not shielded from light because skin is bleached by the light. Their study did not address other important issues, such as varying degrees of skin thickness, skin colour and infants of different ethnic backgrounds, but the authors acknowledge these limitations. Future studies should include larger numbers of infants with larger numbers of measurements so that the reliability, specificity and sensitivity of such devices can be assessed. Infants in Canada are indeed from different ethnic backgrounds; therefore, variability, such as skin colour and thickness, becomes especially important in the Canadian population. Furthermore, it is crucial to investigate the cost-effectiveness of these instruments and the ability to use them for ongoing monitoring of jaundiced infants. If proven effective, these devices can be used to replace the traditional collection of serum from jaundiced infants for the measurement of bilirubin levels.

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LETTER TO THE EDITOR

Homeopathy in the paediatric population

To the Editor;

As paediatricians and physicians who practice or take an interest in homeopathy, we broadly welcome the Canadian Paediatric Society’s position statement on homeopathy (1). Specifically, we welcome the recommendation that physicians should respond to questions about it in an informed and nonjudgemental manner. Regrettably, because of its bias against homeopathy, we wonder whether the statement will contribute to this laudable objective.

The bias is most clearly manifest in the very different treatment of criticisms of trials with positive and negative results for homeopathy. For instance, a double-blind, placebo-controlled study of a homeopathic preparation for chemotherapy-induced stomatitis in children with a positive result is described as suffering from “multiple design problems”. What exactly are these design problems? Not only are these problems not specified but no criticisms of this study have appeared in Medline-listed journals. We are unable to detect any serious flaws beyond the relatively small sample size, and this study would achieve a high Jadad score. In contrast, the position paper makes no criticism of a negative study in asthma of which multiple criticisms have been published (2). The Community Paediatrics Committee was aware of these criticisms (they appear in the reference list; references 48 to 51) yet did not mention the highly critical reaction. This trial could not have had a positive outcome because of a “ceiling effect” (ie, the values for the principal outcome were normal when patients entered the study, and could not have been expected to improve further). Some of the secondary outcome measures also suffered ceiling effects, but those that did not consistently favoured homeopathy.

A study on attention deficit hyperactivity disorder described as a “nonrandomized, noncontrolled trial” was said to suffer from “major methodological problems”. In fact, this was a good quality observational study, with an encouraging result: 75% of children improved by at least 50% in a mean period of 3.5 months. Again, there are no published criticisms. This study does not suffer from major methodological problems unless the Committee takes the view that observational studies are inherently flawed. It is true that such studies cannot distinguish specific from nonspecific effects or from regression to the mean, although of course the traditional placebo-controlled trial cannot distinguish nonspecific effects from regression to the mean, unless it incorporates a waiting list or no treatment control. But observational studies also have important strengths, principally that they describe ‘real world’ situations. In addition, there is a double-blind trial of homeopathy for attention deficit hyperactivity disorder with a positive result, which is not cited (3). Similarly, there are three meta-analyses that examine homeopathy as a whole, all of which have essentially positive conclusions. Yet, the most recent of these is referenced only to criticize trial quality. However, the overall positive conclusion is not even mentioned (4), and a number of other instances of bias could be quoted.

Despite these misgivings, we fully share the Committee’s concern about the impact of homeopathy on immunization. Opposition to immunization is clearly not part of the authentic homeopathic tradition; however, it has come to pass that many nonmedical homeopaths oppose it. We deplore the advice against childhood immunization. Hahnemann, the founder of homeopathy, was unequivocal in his support of vaccination: “...the remarkable and salutary result of the widespread use of Jenner’s cowpox vaccination. The small pox has not since then appeared among us with such widespread virulence. Forty or fifty years ago, when a city was stricken, it lost at least half, often three-quarters of its children” (5). The United Kingdom (UK) Faculty of Homeopathy, a statutory body that admits only legally recognized health professionals, firmly supports childhood immunization (a statement can be found, for instance, in the guidelines of the UK Department of Health [6]). Most medical practitioners who utilize homeopathy integrate their practice of it with conventional medicine, including immunization.

As the position paper acknowledges, homeopathy is widespread and popular and increasingly so. We would add that it is also very popular in all countries of the Indian subcontinent and some important Latin American nations, notably Argentina, Brazil (where it is part of the