

The effects of topical iodine containing antiseptics on thyroidal status of preterm versus term babies

To the Editor

I would like to comment on the interesting study by Hudaoglu et al¹ on the effects of topical iodine containing antiseptics on the thyroidal status of preterm versus term babies.

First, the use of iodinated skin disinfectants in the perinatal period can result in a significant iodine overload of preterm and transient hypothyroxinemia.² Hudaoglu et al¹ addressed in their study that povidone-iodine (PI) might cause transient hypothyroxinemia in preterm babies (>30 weeks gestational age, >1.5 kg) and that might be the reason for behavioral problems observed later in these children. This conclusion should be considered with caution for 2 reasons: 1. It is difficult to solely attribute behavioral disturbances later in life in the studied preterms to transient hypothyroxinemia secondary to antecedent exposure to PI antiseptic as genetic, periconceptional events, nutritional, and infectious insults are among the well-known etiologic agents that might additionally contribute to behavioral disturbances in children.³ 2. I wonder which reference Hudaoglu et al¹ referred in analyzing the results of thyroid function tests (TFT) in the studied preterm. Currently, the available published references for TFT are designed for American^{4,5} and Spanish^{6,7} preterms. According to my knowledge, no similar published Turkish reference is present. Relying on a non-Turkish reference will definitely cast suspicions on interpretation of the estimated TFT in the studied preterms and, hence, might alter the precision of the presented conclusion.

Second, PI, which is a combination of molecular iodine and polyvinylpyrrolidone, has been used for a long time in hand disinfection, skin preparation, and as an antiseptic irrigant. It has a broad-spectrum antimicrobial activity, and its efficacy, particularly in relation to resistant microorganisms such as methicillin-resistant *Staphylococcus aureus*, is well documented. I presume that Hudaoglu et al¹ sent an indirect message to regard PI as a potentially unsafe antiseptic in preterms and substitute it with a safer alternative because of its correlation with thyroid dysfunction and possibly its aftermath on their behavioral skills later in life. This message might be further augmented by the recent observation that alcohol containing antiseptics tend to have the same antimicrobial activity in comparison with PI,⁸ and, hence, can be considered as a safe alternative antiseptic in preterms.

Mahmood D. Al-Mendalawi
Department of Pediatrics
Al-Kindy College of Medicine
Baghdad University
Baghdad, Iraq

Reply from the Author

First, we would like to thank Prof. Al-Mendalawi for his comments on our paper. We would like to point out that as we mentioned in the discussion and conclusion section in our article, the exposure of PI might contribute to behavioral problems. However, it has never been presented as a “solely” responsible factor. As Prof. Al-Mendalawi cited and we emphasized, it might “only” contribute as one of the multiple factors affected these patients and it needs to be confirmed. Recently, Simic et al⁹ demonstrated that transiently reduced thyroid hormone in the neonatal period in preterm infants is associated with a reduced neurocognitive outcome in the attention domain at 3 months corrected age. On the other hand, it is a good idea to use references, but it is not essential for thyroid function tests. The most important fact is that preterm infant cord and postnatal thyroid hormone sera levels differ from those of the term infant and adult values; they differ across the range of prematurity (23–36 weeks), changing with gestational age. Moreover, “normal values” for blood parameters of neonates are generally unavailable, because blood is rarely drawn on healthy, normal neonates to establish normal ranges. Additionally, thyroid function test results like adrenal steroids or growth hormone values could have international cut-off values. Therefore, as Prof. Al-Mendalawi has written in his comment only American and Spanish references exist, but the studies of preterm thyroid function are coming from all over the world. It is worth to mention that 2 special topics differ from this general approach: the areas with iodine deficiency and thyroid gland volume measurements. Many studies of Turkish origin on both these topics are available in the literature. Finally, Prof. Al-Mendalawi is correct on the antiseptic properties of iodine. However, in correlation with previous studies the interpretation of our results supported the conclusion that iodine-containing antiseptics have to be used with utmost caution in preterm infants. As nosocomial infections are a serious problem among preterm infants, there is a need for further investigation of new effective local disinfection methods¹⁰ in this group of patients.

Sema K. Ucar
Department of Pediatrics
Ege University Medical Faculty
Bornova, Izmir, Turkey

References

1. Hudaoglu OG, Uçar SK, Atlihan F, Dizdärer C, Büyükgebiz A. The effects of topical iodine containing antiseptics on thyroidal status of preterm versus term babies. *Saudi Med J* 2009; 30: 783-787.
2. Khashu M, Chessex P, Chanoine JP. Iodine overload and severe hypothyroidism in a premature neonate. *J Pediatr Surg* 2005; 40: E1-E4.
3. Semenova NB, Manchuk VT. Behavioral disorders in children: possible causes and risk factors. *Zh Nevrol Psikhiatr Im S S Korsakova* 2008; 108: 95-98.
4. Adams LM, Emery JR, Clark SJ, Carlton EI, Nelson JC. Reference ranges for newer thyroid function tests in premature infants. *J Pediatr* 1995; 126: 122-127.
5. Clark SJ, Deming DD, Emery JR, Adams LM, Carlton EI, Nelson JC. Reference ranges for thyroid function tests in premature infants beyond the first week of life. *J Perinatol* 2001; 21: 531-536.
6. Carrascosa A, Ruiz-Cuevas P, Potau N, Almar J, Salcedo S, Clemente M, et al. Thyroid function in seventy-five healthy preterm infants thirty to thirty-five weeks of gestational age: a prospective and longitudinal study during the first year of life. *Thyroid* 2004; 14: 435-442.
7. Clemente M, Ruiz-Cuevas P, Carrascosa A, Potau N, Almar J, Salcedo S, et al. Thyroid function in preterm infants 27-29 weeks of gestational age during the first four months of life: results from a prospective study comprising 80 preterm infants. *J Pediatr Endocrinol Metab* 2007; 20: 1269-1280.
8. Choi JS. Evaluation of a waterless, scrubless chlorhexidine gluconate/ethanol surgical scrub and povidone-iodine for antimicrobial efficacy. *Taehan Kanbo Hakhoe Chi* 2008; 38: 39-44.
9. Simic N, Asztalos EV, Rovet J. Impact of neonatal thyroid hormone insufficiency and medical morbidity on infant neurodevelopment and attention following preterm birth. *Thyroid* 2009; 19: 395-401.
10. Bühler C, Bahr S, Siebert J, Wettstein R, Geffers C, Obladen M. Use of 2% 2-phenoxyethanol and 0.1% octenidine as antiseptic in premature newborn infants of 23-26 weeks gestation. *J Hosp Infect* 2002; 51: 305-307.

ERRATA

In manuscript "Nucleic acid amplification technology for hepatitis B virus, and its role in blood donation screening in blood banks" Saudi Medical Journal 2009; Vol. 30 (11): 1416-1421, the author's name should have appeared as follows: Mohammad S. Bamaga, Essam I. Azahar, Ahmed K. Al-Ghamdi, Faris Q. Alenzi, Fayssal M. Farahat

In manuscript "Intervention study of needle stick injury in Iran" Saudi Medical Journal 2005; Vol. 26 (8): 1225-1227, the author's name should have appeared as follows: Sina Mobasherzadeh, Sayed A. Ebnesahidi, Nazafarin A. Mohammadi, Fereshteh Abazari