

Continuous mode large spot transpupillary thermotherapy for retinopathy of prematurity

Dear Editor,

We read with interest the article by Shah *et al.*^[1] They demonstrated that continuous mode large spot transpupillary thermotherapy (LS TTT) was significantly quicker and more time efficient than standard size pulse mode laser for treatment of high-risk prethreshold retinopathy of prematurity (ROP). They recommend it for very small fragile preterm babies, based on similar structural and functional outcomes between the two groups at the end of 1 year. We want to emphasize on following important points which were probably overlooked in the article.

TTT is characterized by longer duration burns in comparison to conventional laser. Longer duration laser burns are more painful due to the thermal effect on treated tissue as the adjacent tissues become heated, whereas the shorter duration burns rapidly cool off.^[2] This has been proven in prospective clinical studies.^[3] Similarly, a larger spot size is associated with more pain sensation as the center remains hot for longer duration, whereas a small burn rapidly dissipates the heat away. Moreover, continuous mode laser leads to more damage to adjacent retinal tissue secondary to passive thermal diffusion beyond the target site.^[2] Hence, although the total duration of continuous mode LS TTT in the study by Shah *et al.*^[1] was shorter than conventional laser mode, longer duration and larger size of burns, and the damage to adjacent tissue caused by continuous mode laser could still lead to more pain during the procedure. As the authors themselves have mentioned, one of the complications of LS TTT could be over-treatment. This over-treatment could also lead to more pain sensation by the baby. It is therefore important to specifically compare the pain sensation felt by the baby during LS TTT versus conventional laser before recommending LS TTT for premature babies. It is justified because studies have demonstrated that exposure to repeated painful procedures can have direct and long-term consequences on the neurological development of neonates and on their response to subsequent painful events.^[4]

Moreover, reliable assessment of pain sensation during treatment for ROP is also important. Shah *et al.*^[1] measured the occurrence of apnea and bradycardia between two groups and reported the absence of both in either group. However, measurement of these physiological parameters that represent autonomic activation is not enough to assess the pain in preterm neonates, because these parameters lack specificity for pain.^[5] All the validated pain scales recommended for premature babies include behavioral responses and the facial expressions of baby as the prime indicator of pain with or without physiological response, because facial expressions are more sensitive to painful stimuli. Hence, it might be prudent to use a validated pain scale to assess the pain response of premature baby during treatment for ROP.^[5]

This is a good article showing the results of LS TTT in treatment of ROP. Our aim is to emphasize the need of assessment of pain sensation felt by baby, preferably using a validated pain scale, during future studies regarding continuous mode LS TTT for ROP, before recommending it for very small fragile preterm babies.

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