

Trans-illumination in Pneumothorax: A Useful Bedside Tool

Pneumothorax in the newborn is a medical and surgical emergency. Early diagnosis with a high index of suspicion and use of trans-illumination can be useful where in-house X-ray facilities are not available readily, and when X-ray picture is doubtful. Trans-illumination is nonionizing, noninvasive and portable, making it a useful tool for the neonatal intensive care unit (NICU).

A neonate born at 31 weeks of gestation developed respiratory distress soon after birth. Child was administered surfactant at one hour of life and was shifted to NICU, where after showing initial improvement, ventilatory requirements increased, and possibility of patent ductus arteriosus (PDA) or pneumothorax were considered. Trans-illumination was performed using a portable fiber-optic cold light source machine (GLOBAL) (*Web Video 1*). After switching off all the lights, cold light source probe was placed perpendicular to the skin and sufficient pressure applied to prevent light leak. Changes in the size and shape of the corona of light were noted as well as the appearance of light separated



FIG. 1 Diffuse corona of light on right side demonstrated by trans-illumination.



FIG. 2 X-ray chest of the neonate after intercostal tube insertion.

from the corona. The right side of hemi-thorax had diffuse corona of light as compared to left side (*Fig. 1*), confirming the diagnosis of pneumothorax. We placed an intercostal drainage (ICD) tube without waiting for X-ray confirmation, as child was hemodynamically unstable. Chest X-ray done post-ICD insertion had residual pneumothorax (*Fig. 2*), which resolved subsequently.

False negative results on transillumination can occur in infants with increased subcutaneous fat or edema. The thickened tissue, particularly in the case of edema, interferes with trans-illumination. False positives trans-illumination can occur in infants with congenital lobar emphysema and pneumo-mediastinum.

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