Cerebral air embolism in a neonate following cardiopulmonary resuscitation

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Received: 23 January 2009 / Accepted: 2 February 2009 / Published online: 25 February 2009
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Sir,

We would like to comment on our analysis of the case reported as a Clinical Image titled “Cerebral air embolism in the neonate following cardiopulmonary resuscitation” [1]. It was stated that the patient had a sudden cardiopulmonary arrest and then resuscitation was started but without success; subsequently head CT demonstrated extensive vascular air. The submitted CT scan demonstrated, by our analysis, air largely in intracranial veins (sphenoparietal sinus, superior ophthalmic vein, probable cavernous sinuses, straight sinus). A small amount of arterial air was likely present additionally. The air embolism was attributed to the cardiopulmonary resuscitation.

Our review of neonatal systemic air embolization [2] indicated that most of these children have neonatal cerebral air embolism as the initiating feature, which subsequently causes the cardiopulmonary arrest. It is likely that this was the sequence of events in this particular submitted case. Review of chest radiographs from this case likely demonstrated air in the right-side cardiac structures, systemic veins (inferior vena cava, hepatic veins, internal jugular veins, subclavian veins, etc.), and the patient may have had

interstitial emphysema in the lungs. This would fit the observations we made in 25 similar cases. We do not feel that this case as presented proved that cardiopulmonary resuscitation can cause air embolism by itself, and we consider that the cardiopulmonary resuscitation is not needed to explain the air embolism and the abrupt demise with intravascular air in this patient. The intravascular air was likely related to lymphatic air embolism into the systemic venous circulation as described in our article. The intracranial venous air likely refluxed retrograde from the intracardiac air, and the small amount of intraarterial air likely reached there through a patent foramen ovale or ductus arteriosus.

References

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