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Point-of-Care Ultrasound for Pulmonary and Extra-Pulmonary Tuberculosis in Children

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To the Editors,

We read with interest the letter by Buonsenso et al. [1] on their experience on lung ultrasound for pulmonary tuberculosis (PTB) in children in response to our study of point-of-care ultrasound (POCUS) in children. The authors indicate that POCUS of the lung is limited with regard to PTB. However, our article addresses POCUS for identification of concurrent extra-pulmonary tuberculosis (EPTB) in children with PTB [2], but does not address lung ultrasound in children with PTB.

Childhood PTB is difficult to diagnose because clinical presentation is non-specific and microbiologic confirmation is only achieved in a minority of children. Imaging therefore plays an important diagnostic role. However, current imaging tools are limited by sensitivity and specificity, as well as availability and/or feasibility in children. The standard radiologic study in childhood TB is chest X-ray (CXR), which can show parenchymal disease or pleural effusion but may not accurately detect mediastinal lymphadenopathy, has poor inter-reader agreement, and may not be affordable in resource-poor, highly endemic settings [3–5]. Computed tomography (CT) may certainly demonstrate lymphadenopathy more often, and may be more accurate for parenchymal disease, but it is not the ‘standard’ technique due

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to radiation exposure and cost. CT or magnetic resonance imaging are even less accessible and require sedation in young children. New imaging approaches are urgently needed to improve diagnosis of childhood TB; and ultrasound emerges as promising non-invasive and cheap point-of-care tool.

Our work focused on POCUS for detection of extra-pulmonary tuberculosis (TB) because children are vulnerable to develop disseminated forms of TB. POCUS for EPTB was found to be valuable in the diagnostic work-up of HIV/TB co-infected adults who may also develop disseminated forms of TB [6–8]. We showed that concurrent EPTB as detected by POCUS, i.e. abdominal lymphadenopathy, pleural or pericardial effusion, or splenic micro-abscesses, was prevalent in almost a third of children with PTB in South Africa, and that follow-up POCUS for EPTB was very useful for monitoring treatment response [2].

In their letter, Buonsenso et al. [1] report lung ultrasound and CT findings from nine pediatric TB cases from Sierra Leone (whether these cases had confirmed or unconfirmed PTB is not reported) and conclude that lung POCUS has limitations. We do not share their skepticism with regard to ultrasound for PTB, because in children, PTB often presents with lung consolidation that may extend to the periphery, and because ultrasound is better than CXR in detecting small consolidation [9].

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