Pediatric Ultrasound: An International Perspective

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Objective:

- To revisit the potential of modern pediatric US, also in the light of increasing use by many different medical specialties and for point-of-care imaging.

- To discuss international aspects and perspectives, trying to appreciate different settings and needs – not neglecting the patients interests as the most important opponent to increasing economic aspects

- To deduct common messages and contents which are necessary for standardizing US worldwide, to grant sufficient quality, and to maintain high level US as a mainstay of Pediatric Radiology

Abstract:

Ultrasound (US) is the mainstay of pediatric imaging. Modern advances hugely widened the field, the applications, and the potential of US. And US has become even more important in the light of the Image Gently campaign – it is the ideal non-invasive and non-irradiating imaging modality that can address most queries, potentially supplemented by fluoroscopy and MRI; US therefore remains an irreplaceable requisite in Pediatric Radiology.

Many specialties have taken on (pediatric) US and are performing it – pediatricians, pediatric neurologists, pediatric neurosurgeons, pediatric urologists and orthopedists, emergency and family doctors, interventionalists and anesthesiologists etc… – there is no use to try to change this or to continue long-lost turf battles. However, for the sake of the children, proper quality has to be provided – here Pediatric Radiology should take the lead as the subspecialist experts, define the standards, create quality assurance measures, and provide / supervise education and training. And pediatric Radiology must keep US in its armamentarium, as an indispensable and requisite imaging tool.

US is performed by different staff in different continents, countries, and subspecialties, it may vary even between institutions of a single city or within a hospital. This will affect how US is seen and perceived, its diagnostic value and reliability (impacting the number of ordered CTs / fluoroscopies …), whether there is a 24/7/365 availability of high level dedicated pediatric US, and training as well equipment number and types. The role and use of US is also defined by the economic situation (e.g., reimbursement issues), by medico-legal aspects, as well as by local regulations and health care strategies that vary throughout the world. And finally, US is increasingly becoming the modern stethoscope (i.e., “sonoscope”) for basic patient assessment and during medical education.

Additionally, US is being discovered as the ideal point of care (POC) imaging option: portable systems have been developed that can easily be used anywhere and are relatively inexpensive, and wireless connections are available around the globe enabling remote reading of images. These options may
improve patient care, e.g., at an emergency situation when other imaging is not available quickly. And it may help to establish a basic care in low resource settings and areas with no access to any other imaging. And for these situations - as one will not be able to provide sufficient specialists to perform all these investigations - even non-medical staff are being trained to perform an orienting scan (e.g., soldiers in the battle field, local non-medical health care staff particularly in rural areas and third world countries...) that then is sent to experts for reading and further decision making. But in the economic world where increasingly health care is primarily seen as business option this POC-US is suggested as a further option to decrease health care costs and to reduce other imaging. However, there is no evidence yet on its impact on overall health of the population, and whether this may lead to late diagnoses of conditions that might have been detected earlier by a dedicated US examination performed by a well-trained specialist with a high-end device. These aspects have to be studied to avoid these hazards in the “Western” world. But comparative and thorough research is also necessary to prevent promoting a solution for low resource settings that eventually may be immoral as it may constitute an alibi tool prohibiting the establishment of proper health care structures and environments. In such conditions, however, POC-US may serve as a bridging option until better & proper structures are in place. And the orienting “sonoscope” may well be a helpful tool in certain clinical conditions and scenarios where such basic information is sufficient for immediate triage and decision making.

With all this in mind, the different environments, options and rules as well as limitations in the different settings and countries or continents, one needs to acknowledge that a widely varying use of US by different medical (and even non-medical) groups will continue. Even and particularly in this scenario, (Pediatric) Radiology has an important role in safeguarding proper education, in initiating and defining quality assurance measures and standards, as well as in promoting and performing research for further development of US in neonates, infants and children. And it needs to be remembered that we still are physicians and that the patient and patient care is our prime task - we have to make this available to our small patients around the world in spite of new challenges and various obstacles.