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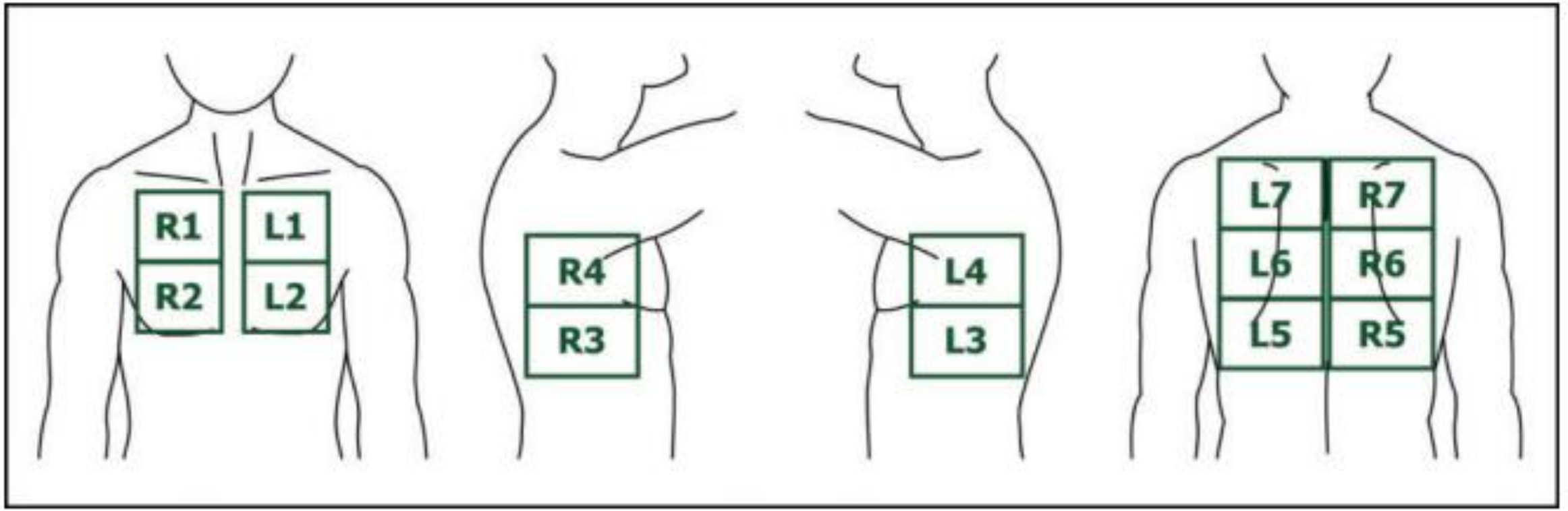
Professional Standards in Thoracic Ultrasound – EFSUMB Position Paper

Professionelle Standards in der Thoraxsonografie – Positionspapier der EFSUMB

Guidelines & Recommendations Thieme

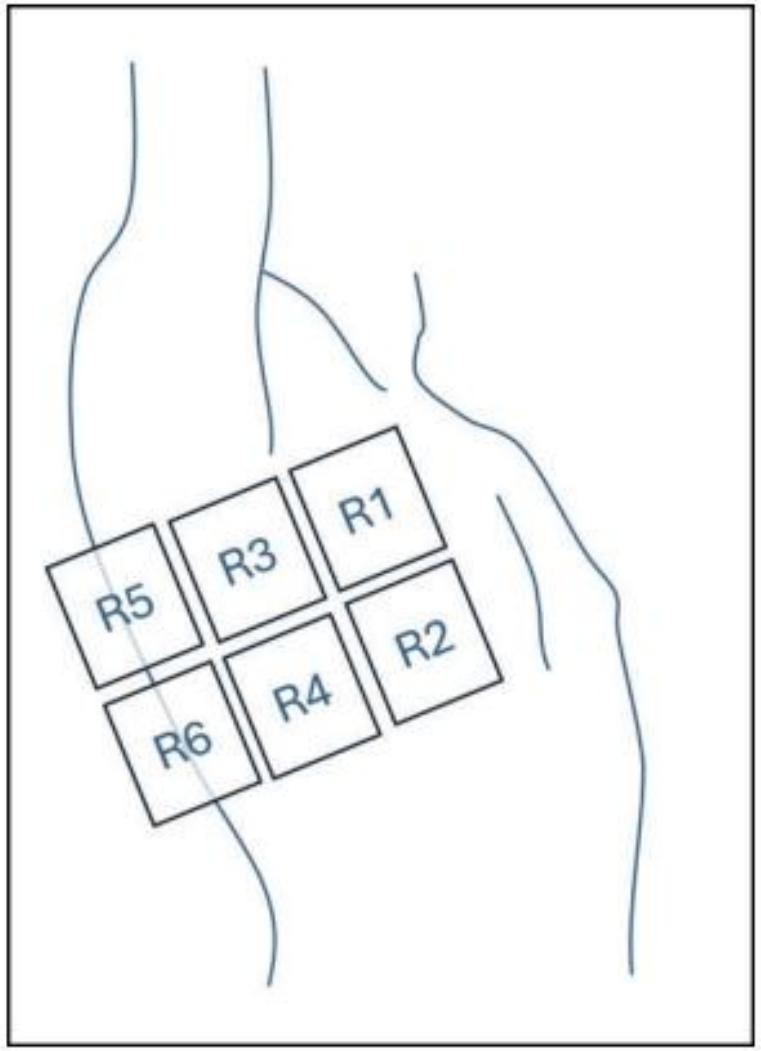
▶ **Table 1** Overview of general TUS indications.

Diagnostic TUS	TUS-guided procedures
▪ Assessment of pathology in the chest wall and related structures ▪ Assessment of parietal pleura and the pleural cavity (e.g., effusion, pneumothorax, pleural masses) ▪ Assessment of visceral pleura (e.g., appearance, movement, and presence of B-lines and/or comet-tail artifacts) ▪ Assessment of lung consolidation in contact with the visceral pleura ▪ Assessment of the diaphragm and diaphragmatic function ▪ Assessment of pathology in the anterior and upper mediastinum ▪ Assessment of the presence of intercostal arteries prior to intervention ▪ Reassessment and monitoring of treatment response ▪ Assessment of pleurodesis	▪ TUS-guided needle aspiration of pleural effusions and other thoracic fluid collections ▪ TUS-guided pleural drain or catheter placement ▪ TUS-guided trocar insertion for thoracoscopic procedures ▪ Transthoracic ultrasound-guided lung drain insertion (e.g., for lung abscess) ▪ Transthoracic ultrasound-guided biopsy (e.g., core biopsy, needle aspiration biopsy) ▪ TUS-guided nerve blocks (e.g., intercostal nerves) ▪ TUS-guided ventilatory strategy (prone positioning, positive end-expiratory pressure (PEEP) titration)

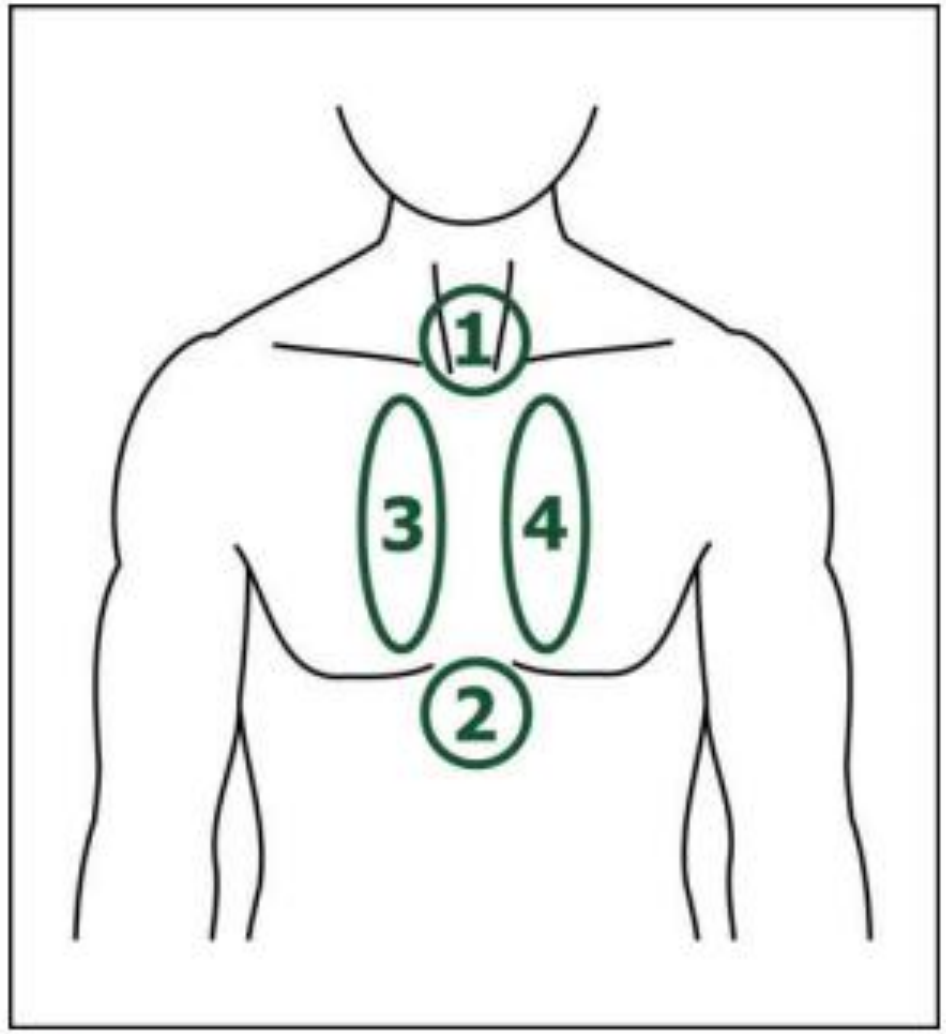


► **Fig. 1** Systematic TUS 14-zone scanning protocol (adapted from Laursen et al. [35, 36, 37]).

ABSTRACT This position paper of the European Federation of Societies for Ultrasound in Medicine and Biology (EFSUMB) on professional standards in thoracic ultrasound is a supplement to EFSUMB's previously published professional standards in medical ultrasound – general aspects. The paper represents a position across the different medical professions within EFSUMB regarding optimal standards for the performing and reporting of thoracic ultrasound examinations by any professional ultrasound practitioner. It describes aspects that ensure procedure quality, effectiveness, efficiency, and sustainability in the application of thoracic ultrasound. The paper provides recommendations regarding safety and the indication for thoracic ultrasound examinations, requirements for examination rooms, structured examinations, systematic reporting of results, and the management, communication, and archiving of ultrasound data.



▶ **Fig. 2** Systematic TUS 12-zone scanning protocol for use in a supine patient in an intensive care setting (adapted from Mongodi et al. [38]).



▶ **Fig. 3** Views for transthoracic assessment of the mediastinum. 1: Suprasternal view; 2: Infrasternal view; 3: Right parasternal view; 4: Left parasternal view.

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ORIGINAL RESEARCH

Changes in Intrauterine Device Position From Initial Insertion to Check Up

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Kết luận

Một khi dụng cụ tránh thai trong tử cung (IUD) được đặt vào vị trí thích hợp trong đáy tử cung, khả năng nó thay đổi vị trí là cực kỳ thấp trừ khi bệnh nhân có dị tật cấu trúc tiềm ẩn hoặc đã từng phẫu thuật cắt bỏ một phần tử cung. Vị trí đáy tử cung khi đặt ban đầu là 95%, và khi kiểm tra sau thủ thuật, tỷ lệ này đã cải thiện lên 98,7%. Điều đáng mừng là, trong số các IUD được đặt không tối ưu, 84% đã tự cải thiện vị trí đến vị trí thích hợp sau 5-8 tuần. Điều này cũng cho thấy sự di chuyển của thiết bị đến vị trí tối ưu. Với bằng chứng cho thấy hầu hết các IUD sẽ di chuyển đến vị trí thích hợp hơn, chúng tôi đề xuất tất cả các hướng dẫn nên loại bỏ việc kiểm tra sau 4-8 tuần, và chỉ nên thực hiện siêu âm nếu có triệu chứng hoặc không thể sờ thấy dây IUD.

Tóm tắt tác động

Nghiên cứu này đánh giá sự di chuyển hoặc thay đổi vị trí của các dụng cụ tránh thai trong tử cung sau khi đặt ban đầu ở dân số Úc, và tính hữu ích lâm sàng của việc kiểm tra sau thủ thuật bằng siêu âm. Các hướng dẫn hiện hành của Úc không nêu rõ liệu siêu âm có cần thiết trong các lần kiểm tra sau thủ thuật hay không. Nghiên cứu này chứng minh rằng siêu âm không phải là một phần bắt buộc của các lần kiểm tra sau thủ thuật, vì phần lớn vòng tránh thai sẽ tự di chuyển đến vị trí thích hợp trong vòng hai tháng sau khi đặt.

ABSTRACT

Background

There is some evidence of intrauterine contraceptive devices (IUDs) migrating after insertion; however, these studies had small sample sizes and have not been performed with an Australian population. Furthermore, current guidelines for IUDs provide ambiguous recommendations for post-procedure check-ups 5–8 weeks after insertion. In some cases, it is unclear if a pelvic ultrasound should be used to ascertain IUD position. The clinical usefulness of ultrasound as the primary post-procedure investigation has not been fully elucidated, nor has the migration and position change in an Australian population.

Aim

To evaluate the migration or change in position of IUDs in an Australian population, and the clinical usefulness of a post-procedure check with an ultrasound following insertion.

Methods

A retrospective cohort study over 3 years across eight Sydney sites by multiple practitioners.

Results

645 cases were referred for insertion or IUD exchange under ultrasound. In 5% of cases the device was sub-optimally positioned at the time of insertion. On post-procedure follow-up, of the IUDs in the optimal position, 98.5% remained unchanged. 1.3% changed to a suboptimal position, but of these 75% had an underlying uterine anomaly. Of the devices that were sub-optimally positioned at time of insertion, 84% migrated to the optimal fundal position; those unchanged from suboptimal (16%) had anomalies or other causes identified.

Conclusion

Once an IUD is inserted into an appropriate position in the fundus, it is extremely unlikely to change position unless the patient has an underlying structural anomaly or a previous hysterotomy. Fundal positioning at the initial insertion was 95%, which on post-procedure check-up improved to 98.7% of cases. Reassuringly, of the IUDs which were sub-optimally positioned, 84% improved their position to an appropriate location 5–8 weeks later. This also suggests migration of devices into an optimal position. With this evidence that most IUDs will migrate to a more appropriate position, we suggest all guidelines remove the 4–8 week check, and that to perform an ultrasound only if symptomatic or if unable to palpate the IUD strings.

Impact Statement

This study evaluates the migration or change in position of intrauterine contraception devices after initial insertion in an Australian population, and the clinical usefulness of a post-procedure check using ultrasound. The current Australian guidelines are not explicitly clear whether an ultrasound is required in post-procedure check-ups. This study demonstrates that an ultrasound is not a necessary component of post-procedure check-ups, as the vast majority of IUDs will migrate into an appropriate position over a two-month period following insertion.

Original Article

Thieme

Reliability of a Standardized Ultrasound Protocol for the Diagnosis of Thoracic Outlet Syndrome

Reliabilität eines standardisierten Ultraschallprotokolls zur Diagnose des arteriellen Thoracic-Outlet-Syndroms

Authors

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Abstract

Purpose

Arterial thoracic outlet syndrome (aTOS) is a rare condition, but if undiagnosed, it can have serious consequences for affected patients, up to and including limb loss. Ultrasound could be used here as a widely available method for screening, but it is said to have very high investigator dependence. The fact that ultrasound can be used safely for diagnostic purposes has already been demonstrated. The aim of this study was to evaluate the repeatability of a standardized examination for the diagnosis of aTOS.

Material and Methods

We recruited inpatients with high-grade suspected arterial thoracic outlet syndrome who were evaluated for invasive therapy at our TOS center. Routine diagnostics were performed according to clinic standards. In addition, 2 sonographers, one highly experienced and one less experienced, performed ultrasound diagnosis according to a standardized protocol. Image acquisition and interpretation were performed independently, and sonographers were mutually blinded. For analysis, the experienced sonographer served as a reference. Agreement between assessors was analyzed using concordance analysis.

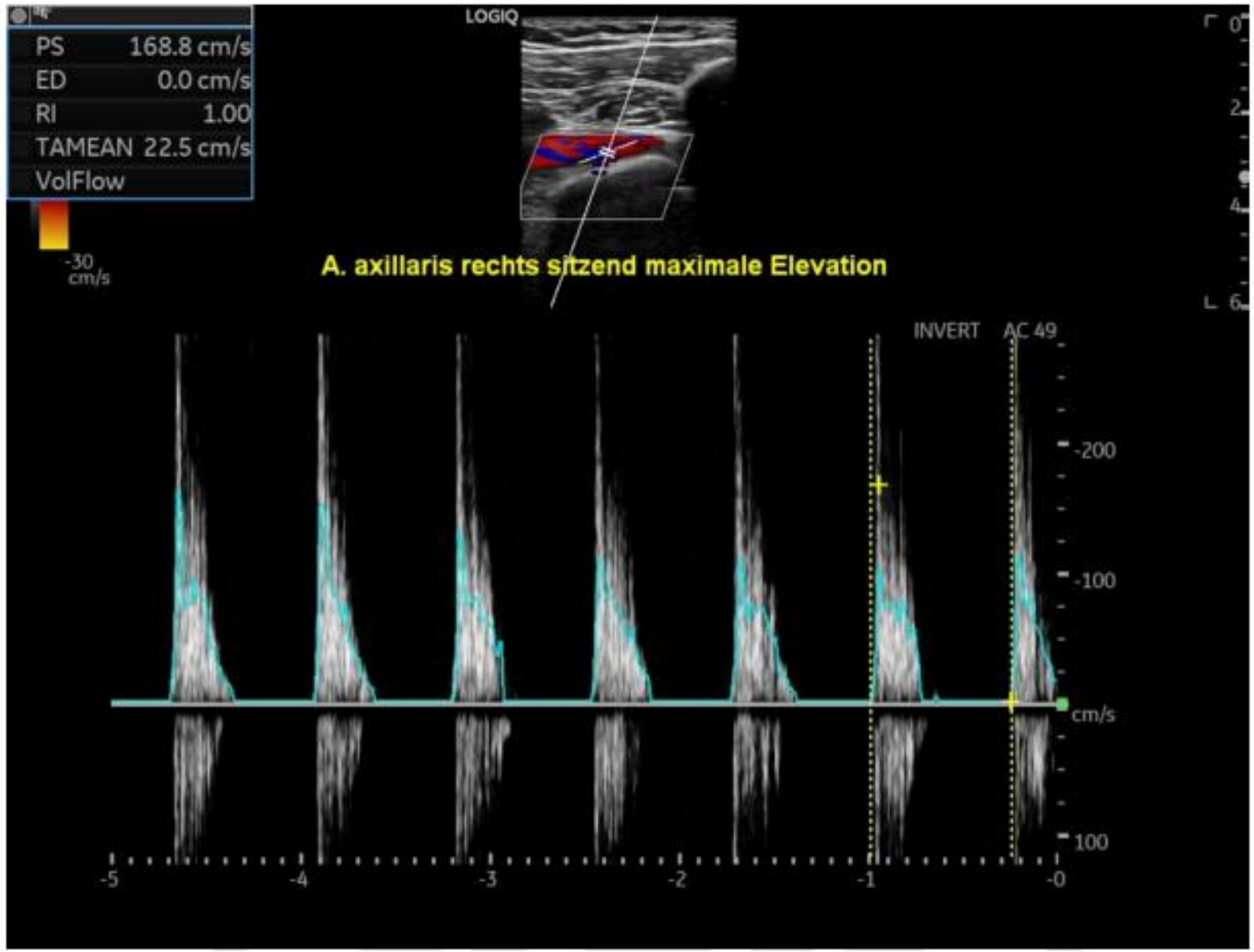
Results

51 consecutive patients (67% female) aged 39.3±13.0 years were included within 11 months. The standardized ultrasound protocol could be performed in all patients. The prevalence of TOS was high (79.4%; CI: 71.4–87.3%) in our cohort. Ultrasound inter-rater agreement using the standardized protocol was very good at 0.820 (CI: 0.624–1.000).

Conclusion

Ultrasound diagnosis of TOS using a standardized protocol can be performed effectively and shows a high agreement between 2 sonographers.

Supplementary Figure 1: Pulsed-wave Doppler (pw-Doppler) of the distal subclavian artery in the elevated position in the same subject: The flow profile is monophasic with inverse flow components, indicating upstream compression.



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Original Article

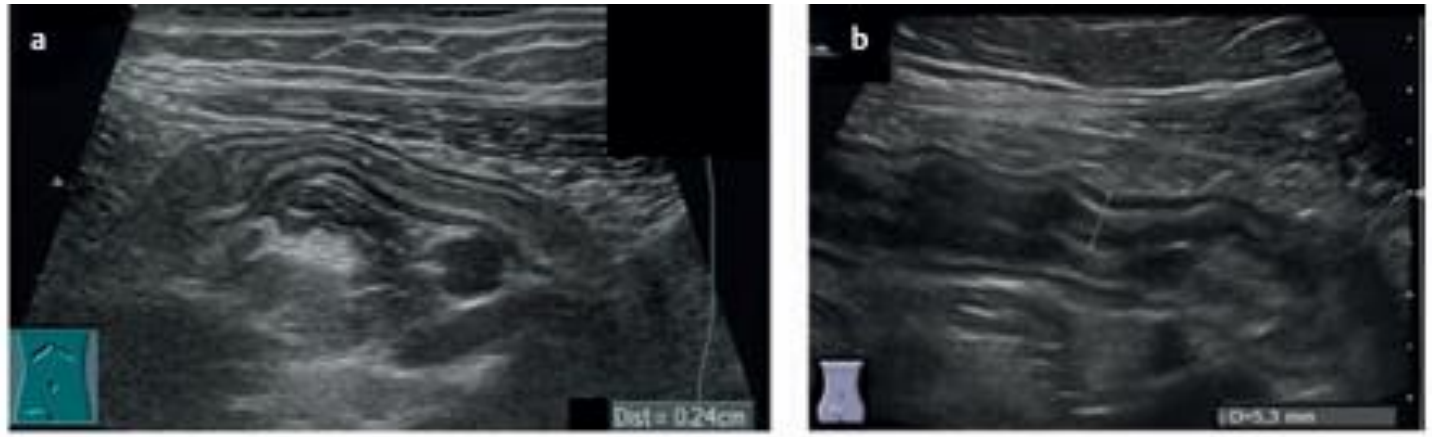
Thieme

B-mode ultrasound and dynamic contrast-enhanced ultrasound (DCE-US) of the bowel wall in patients with gastrointestinal food allergy in comparison to Crohn's disease and healthy controls

Purpose The aim of this study was to assess bowel wall thick ness using B-mode ultrasound (US) and perfusion measurement by DCE-US in patients with a food allergy (FA) compared to healthy controls (HCs) and patients with active Crohn's dis ease (CD). Materials and Methods Bowel wall thickness and perfusion were assessed in FA patients as well as in HCs on a potato rice diet (PRD) and after a provocation diet (PD). Additionally, pa tients with active CD were examined for further comparison. Results A total of 48 individuals (20 with FAs, 20 with CD, and 8 HCs) were included. There was no significant difference be tween the HCs and patients with FAs regarding the thickness of the terminal ileum (1.8mm vs. 2.2mm; $p = 0.46$) and the sigmoid colon (2.1mm vs. 2.1mm; $p = 1$) on a PRD. After a PD, the median value was significantly lower in the terminal ileum for HCs compared to patients with FAs (1.6 mm vs. 2.3 mm; $p = 0.03$). In CD patients, the thickness of the terminal ileum was far more pronounced (median thickness 6 mm) compared to HCs and patients with FAs ($p < 0.001$). There was no statistically significant difference for all tested DCE-US parameters in the terminal ileum between the HCs and patients with FAs on either PRD or PD. However, DCE-US perfusion parameters (PE, WiAUC, WiR, WiPi, and WoR) were significantly higher in patients with CD compared to HCs and patients with FAs on a PD. Conclusion Assessment of wall thickening of the terminal ileum using US and perfusion measurements via DCE-US appears to be insufficient for distinguishing between HCs and patients with FAs. However, US and DCE-US could be helpful in differetiating patients with CD from those with FAs.

Patients with a food allergy

All patients with an FA were in a clinically stable condition. The FA had to have been confirmed previously by an extensive workup as either an IgE or non-IgE-mediated gastrointestinal food allergy. The prior diagnostic evaluation included anamnesis, H2 breath tests, the exclusion of celiac disease, performance of prick tests, deter mination of blood IgE levels as well as intestinal IgE level measure ment by endoscopically guided segmental gut lavage to determine intestinal TNFα, specific and total intestinal IgE levels [15, 16]. An FA was diagnosed by either double-blind or single-blind food challenge tests with placebo controls [16, 17]. Only patients meet ing the appropriate laboratory criteria during allergen provocation tests and with reproducible clinical reactions during the food chal lenge procedures were included. All clinical symptoms were grad ed using the Erlangen symptom score for FAs, a standardized scor ing system for gastrointestinal-mediated allergies [17]. All controls reported no clinical symptoms after food consumption and did not suffer from other allergic diseases, such as rhinitis.



Original Article

Microvascular imaging versus CEUS in the characterization of renal masses: preliminary experience in a tertiary care referral university hospital

Mikrovaskuläre Bildgebung versus CEUS bei der Charakterisierung renaler Raumforderungen: Erste Erfahrungen in einem Universitätsklinikum der Maximalversorgung

Authors

Author Affiliations

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Abstract
Purpose
Evaluation of the possible role of microvascular imaging (MI) for the detection of vascularization of renal lesions, while comparing it with contrast-enhanced ultrasound (CEUS).
Materials and Methods
137 patients (160 renal lesions, 64 solid and 96 cystic) were enrolled in this single-center, retrospective, observational study. For solid masses, both the intralesional and the peripheral vascularization was analyzed and quantified by MI and then compared to peak enhancement on CEUS. Regarding cystic lesions, we evaluated the presence or absence of vascularization within the cystic wall and/or septa. MI results were compared with CEUS findings using Pearson's Chi square test. An optimal size cut-off for renal lesions was determined with the Youden test.
Results
For solid lesions, a statistically significant correlation ($p < 0.05$) was observed between the MI parameters and the peak enhancement on CEUS. The detection rate (DR) for lesional vascularization on MI was 87.5%, while if we consider only lesions larger than the optimal cut-off (14mm), the DR increases to 98%. In cystic lesions, the MI showed a high specificity (93.9%) in predicting CEUS results and a high positive predictive value (84.2%). The concordance was 100% in Bosniak I lesions and 80% in Bosniak IV lesions, while it was lower for the other classes. Furthermore, we found a statistically significant correlation ($p < 0.05$) between Bosniak grade and lesional vascularity on MI.
Conclusion
Our preliminary study shows that **MI cannot replace CEUS**, but could reduce its use, especially in solid lesions larger than 14mm and in cysts classified as Bosniak IV, a goal that is particularly important in an active surveillance setting.