Thieme

ÖGUM-Mitteilungen
Österreichische Gesellschaft für Ultraschall in der Medizin

# Bemerkenswerte Publikationen – Ultraschall mit österreichischem Beitrag …

**Fusion Imaging of Contrast-enhanced Ultrasound With CT or MRI for Kidney Lesions.**

*Auer T[1,2], Heidegger I[3], DE Zordo T[2,4], Junker D[1,2], Jaschke W[2], Steinkohl F[2], Aigner F[5]*

1 Department of Radiology, Landeskrankenhaus Hall, Hall in Tirol, Austria
2 Department of Radiology, Medical University Innsbruck, Innsbruck, Austria
3 Department of Urology, Medical University Innsbruck, Innsbruck, Austria
4 Department of Radiology, Brixana Private Clinic, Brixen, Italy
5 Department of Radiology, Medical University Innsbruck, Innsbruck, Austria
Friedrich.Aigner@tirol-kliniken.at

In Vivo. 2019 Jan-Feb; 33(1):203 – 208. doi: 10.21873/invivo.11 460

To evaluate the feasibility of ultrasound (US) computed tomography (CT) or magnetic resonance imaging (MRI) fusion imaging (FI) for localization and assessment of kidney lesions.

Twenty-eight patients with kidney lesions previously detected on CT or MRI were included in this retrospective study. All 28 patients with kidney lesions, which were indefinable (42.9 %) or hard to localize (57.1 %) on gray-scale US alone, underwent FI of US with CT/MRI datasets. In 23 (82 %) patients with indeterminate kidney lesions, FI including contrast-enhanced US was conducted.

FI was successfully performed in 25 out of 28 (89.3 %) patients. FI with contrast-enhanced US was able to clarify the previously detected kidney lesions in 21 out of 23 patients (91.3 %).

FI is a feasible technique for localizing kidney lesions that are hard to define by grayscale US alone and the additional application of contrast-enhanced US is useful in clarifying indeterminate CT or MRI findings.

**Ultrasonography for the Diagnosis of Carpal Tunnel Syndrome in Diabetic Patients: Missing the Mark?**

*Steinkohl F[1], Loizides A[1], Gruber L[1], Karpf M[1], Mörsdorf G[2], Gruber I[2], Glodny B[1], Löscher W[3], Gruber H[1]*

1 Department of Radiology, Medical University Innsbruck, Austria
2 Department of Vascular Surgery, Medical University Innsbruck, Austria
3 Department of Neurology, Medical University Innsbruck, Austria

Rofo. 2019 Feb;191(2):117 – 121. doi: 10.1055/a-0639-5713. Epub 2018 Jul 2

Diabetes mellitus (DM) and carpal tunnel syndrome (CTS) are common pathologies. The diagnosis of CTS can be facilitated by the use of an ultrasound-based wrist-to-forearm ratio (WFR) of the nerve diameter. However, the applicability of WFR in DM-patients is not yet clear.

233 wrists of 153 patients were examined. Cross-sectional areas (CSA) of the median nerve were obtained using a linear array probe. The WFR was calculated.

Diabetics with CTS had significantly lower WFR values than non-diabetics with CTS ($p = 0.002$). There was no difference between the WFR of diabetics with and without CTS ($p = 0.06$). The diagnostic accuracy between diabetics with and without CTS was low for measurements of WFR (ROC AUC = 0.630, 95 % CI 0.541 – 0.715, $p = 0.011$).

Our findings suggest that the WFR has a low diagnostic accuracy in diabetic patients with CTS and should be used with caution in those patients.

The diagnostic accuracy of WFR is low in patients with DM. WFR should not be used in patients with DM. The sonographic evaluation of the median nerve in patients with DM should focus on morphological changes.

**Compliance assessment and flip-angle measurement of the median nerve: sonographic tools for carpal tunnel syndrome assessment?**

*Gruber L[1], van Holsbeeck MT[2], Khoury V[3], Deml C[4], Gabl MF[4], Jaschke W[5], Klauser AS[5]*

1 Department of Radiology, Medical University Innsbruck, Anichstraße 35, 6020, Innsbruck, Austria.
leonhard.gruber@i-med.ac.at
2 Musculoskeletal Radiology, Department of Radiology, Henry Ford Hospital, 2799 W. Grand Blvd, Detroit, MI, 48202, USA
3 Division of Musculoskeletal Imaging, University of Pennsylvania Health System, 3737 Market St, Philadelphia, PA, 19104, USA
4 Department of Trauma Surgery, Medical University Innsbruck, Anichstraße 35, 6020, Innsbruck, Austria
5 Department of Radiology, Medical University Innsbruck, Anichstraße 35, 6020, Innsbruck, Austria

Eur Radiol. 2019 Feb;29(2):588 – 598. doi: 10.1007/s00330-018-5555-3. Epub 2018 Jul 9

To assess the diagnostic performance of median nerve (MN) flip-angle measurements, deformation during wrist flexion [transit deformation coefficient (TDC)], during compression [compression defor-

mation coefficient (CDC)] and fascicular freedom to potentially identify fibrotic MN changes in patients with carpal tunnel syndrome (CTS).

This prospective study was performed with institutional review board approval; all participants provided oral and written informed consent. Wrists in 21 healthy participants and 29 patients with CTS were examined by ultrasound. MN movement during wrist flexion, MN deformation during transition over the flexor tendons (TDC) and during controlled compression (CDC) as well as fascicular freedom were assessed. Diagnostic properties of these parameters were calculated and compared to clinical findings and cross-section area measurements (ΔCSA).

Low flip angles were associated with high ΔCSA at a receiver-operator characteristics area under the curve (AUC) of 0.62 (0.51 – 0.74). TDC [AUC, 0.83 (0.73 – 0.92), 76.3 % (59.8 – 88.6 %) sensitivity, 88.5 % (76.6 – 95.7 %) specificity], restricted fascicular movement [AUC, 0.86 (0.78 – 0.94), 89.5 % (75.2 – 97.1 %) sensitivity, 80.8 % (67.5 – 90.4 %) specificity] and compression-based CDC [AUC, 0.97 (0.94 – 1.00), 82.1 % (66.5 – 92.5 %) sensitivity, 94.2 % (84.1 – 98.8 %) specificity] demonstrated substantial diagnostic power (95 % confidence intervals in parentheses).

Fascicular mobility, TDC and CDC show substantial diagnostic power and may offer insights into the underlying pathophysiology of CTS.