Wertigkeit der Scherwellen Elastographie (shear wave elastography) als Instrument einer erweiterten Diagnostik von Schilddrüsenknoten

Dr. N. Körber-Hafner
Dr. C. Körber

Diagnostikum Nuklearmedizin Fulda

Diagnostikum Nuklearmedizin Netz

Value of Shear wave elastography as a tool for further diagnostic procedure with thyroid nodules

Zielsetzung:

Die technischen Möglichkeiten der Ultraschall Untersuchungen nehmen in den letzten Jahren zu.

Neben der Real Time Elastographie (RTE) ergeben sich weitere neue Möglichkeiten mittels Share Wave Elastographie in der weiteren Differenzierung von Schilddrüsen-Knoten

Alle hier untersuchten Patienten mit Schilddrüsenknoten durchliefen Ultraschall, Szintigraphie, MIBI Szintigraphie, und Laborkontrollen

Ergänzend wurde daher die Share Wave Elastographie als erweiterte Diagnostik angewendet.
Gerät: Esaote 9, Programm QElaxto2 b

Shear wave elastography ermöglicht eine quantitative Beurteilung der Elastizität des Gewebes / Schilddrüsenknotens indem die Ausbreitungsgeschwindigkeit der Scherwellen im Gewebe gemessen wird, das Ergebnis wird quantitativ in m/s angegeben.

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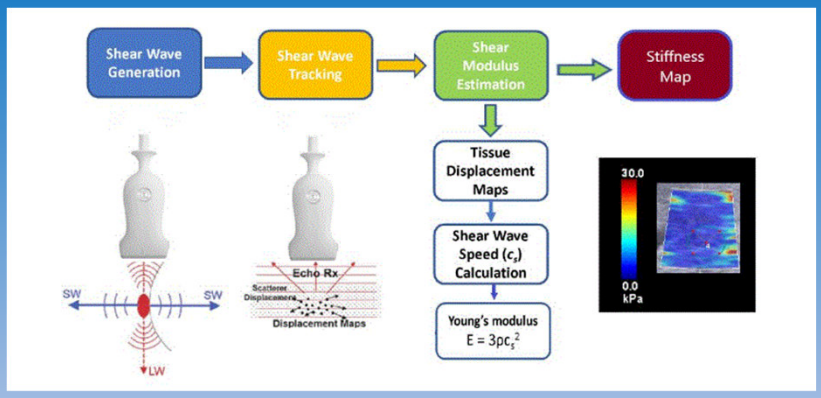

- Median (MED) in kPa or m/s
- IQR/MED in %

Side these, the software give also additional measurements such as:
- Average (AVG) in kPA or m/s
- Standard Deviation (SD) in kPpa or m/s
- Interquartile Range (IQR) in kPa or m/s

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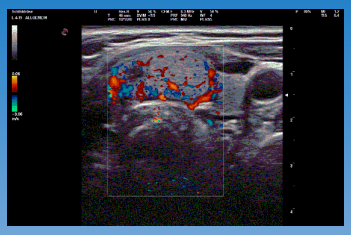
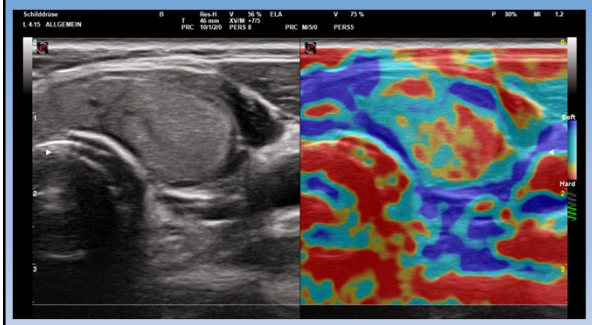
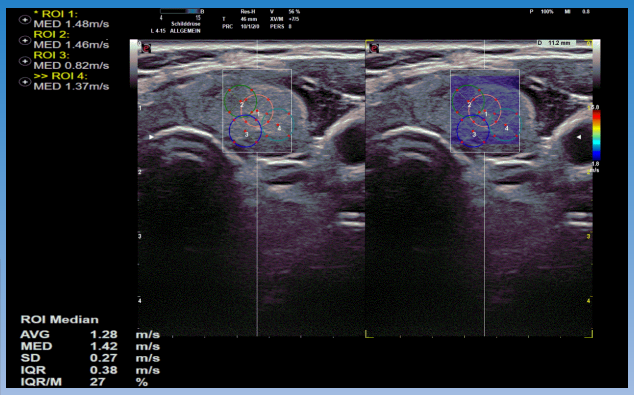


a) Doppler-Sonographie





b) Share wave Elastographie

c) Real time Elastographie

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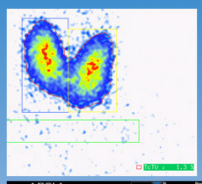
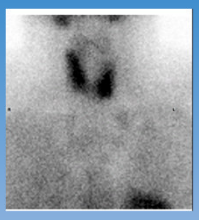
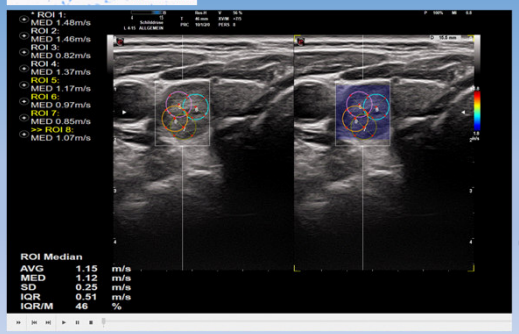
Patientenbeispiel Knoten im Ultraschall rechts
Echoärmerer Knoten 2 ml rechts



a) Tc-99m Szintigraphie



b) Tc-99m MIBI-SZ



c) Share wave Elastographie Knoten rechts

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11 patients were used for the evaluation of the programme. Subsequent thyroid surgery was performed on all patients because of cold nodules.

8 patients had a benign diagnosis (follicular or oncocytic adenoma) and

3 patients had the histologic diagnosis of a thyroid carcinoma (2 papillary and 1 follicular thyroid carcinoma).

In the patients with benign thyroid carcinomas the mean value of the shear wave elastography was 1,7 $\pm$ 0,8 m/sec and with the malignant disease 5,8 $\pm$ 1,6 m/sec (t-test p< 0,002).

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Alter	Volumen Knoten	Szintigraphie	MIBI	Share wave m/s
63	10	Kalt	Nicht vermehrt	1,8 ± 0,2
74	14	Indifferent	Nicht vermehrt	0,9 ± 0,5
28	7	Indifferent	Indifferent	1,4 ± 0,7
37	11	Kalt	Nicht vermehrt	2,1 ± 0,6
45	17	Kalt	Nicht vermehrt	1,9 ±0,5
55	6	Kalt	Vermehrt	1,5 ± 0,8
76	11	Kalt	Nicht vermehrt	1,9 ± 0,7
35	8	Kalt	Vermehrt	1,7 ± 0,9
51,6 ± 16,3	10,5 ± 3,6			**1,7 ± 0,8**

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Alter	Volumen Knoten	Szintigraphie	MIBI	Share wave m/s
75	45	Kalt	Nicht vermehrt	6,7± 1,2
27	10	Kalt	Nicht vermehrt	4,8± 1,8
42	10	Kalt	Indifferent	5,2± 1,4
48 ± 24,6	10,5 ± 3,6			**5,8** ± 1,6

T-test p < 0,002

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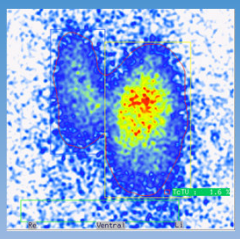
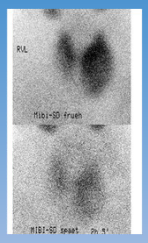
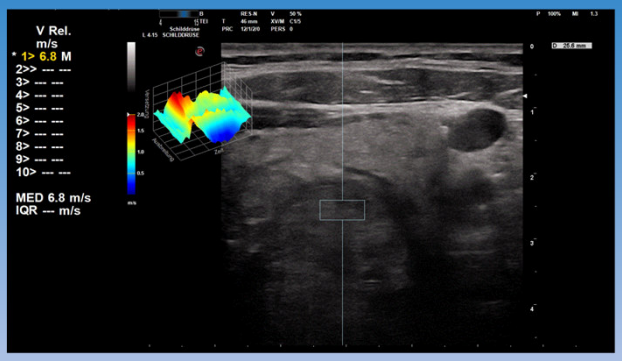
Foll. Schilddrüsen-Karzinom pT3 N1 Mx







So far this parameter could help to distingiush between benign and malignant lesions as shown in comparison to the final histologic findings but must be evaluated in larger patient cohortes.

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