

# Salivary Gland Ultrasound in primary and secondary juvenile Sjögrens Syndrome- longitudinal view over a 24 months period

Manuela Krumrey-Langkammerer, Katharina Friedinger, Johannes-Peter Haas  
German centre for pediatric and adolescent rheumatology, Garmisch-Partenkirchen, Germany



## Introduction

Salivary Gland Ultrasound (SGUS) has become an important tool to visualize morphological changes in pediatric patients with primary or secondary Sjögren’s Syndrome (SS).It can show the degree of inflammatory infiltrates in four major salivary glands (1,2,5). This study analyses SGUS observations longitudinal according to the OMERACT and Doppler semi-quantitative scoring systems (3, 4) over 24 months performed in a cohort of primary and secondary juvenile SS patients (jSS).

## Methods

Longitudinal examinations in n=20 patients were performed in a single center SS cohort over 24 months by two experienced observers.

Time-line: T0= first visit, t1= within the following 6 months, t2= within 12 months, t3= within 24 months.

Inclusion criteria: (a) primary or secondary jSS and (b) any present glandular symptoms. A Canon Aplio® 800 US-system with a linear high-frequency transducer was used. Exams scored after OMERACT semiquantitative -scoring system (0-3), including Colour Doppler (0-3). Chart data, medication and ESSDAI were collected at every examination.

Primary SS cDMARD (n=5) 83.3%		Secondary SS cDMARD (n= 12) 85.7%	
Omeract (mean) score t0 = <b>2.13</b>		Omeract (mean) score t0 = <b>1.03</b>	
Decreased score	n= 1	Decreased score	n= 4
Increased or unchanged	n= 5	Increased or unchanged	n=10
Doppler (mean) score t0 = <b>1.7</b>		Doppler (mean) score t0 = <b>0.82</b>	
Decreased score	n= 3	Decreased score	n= 5
Increased or unchanged	n= 3	Increased or unchanged.	n= 9
Suspicious morphologic changes -> <b>biopsy n=2</b> Fibrotic changes n= 3		Suspicious morphologic changes n=0 Fibrotic changes n= 3	

## Conclusion

- Over the period of 24 months no significant improvement of typical morphologic lesions were detected (Fig 1).
- There was no correlation between scores and disease-duration or medication with cDMARDS.
- In general the mean blood flow scoring was higher in submandibular glands (Fig 2). In our cohort a decrease in Doppler scoring might represent a late fibrotic state though there is no significant correlation with disease course.
- We confirm SGUS as a diagnostic tool also as a monitoring tool in the course of the disease ,especially in detecting suspicious morphologic changes of salivary gland parenchyma (MALT) over time.

## Results

- 17 female and 3 male patients were included, mean disease duration of 3.7 years at t0 and a mean age at disease onset 10.5 years.
- pSS in 6 and sSS in 14 patients, ESSDAI values from 0 to 18. Poor association between SGUS score and ESSDAI at baseline t0 (Fig 1).

Highest B-mode score: in 35% at t3

Doppler highest score: in 35% at t3

25% at t0

20% at t0
- Sum scoring in B mode showed a decrease over the 24 months period in n=5 , while n=15 sum scores persisted or increased (Table 1).
- In n=6 one glandula developed morphologic fibrosis over time. N=2 had gland biopsy due to suspicious morphologic changes in parenchyma.
- Submandibular glands are of a higher vascularization in general (Figure 2) :

Parotid gland vascularization was graded 0 in 63 of 104 scans (preprandial)

Submandibular Doppler was graded 0 in only 27 of 97 scans (preprandial)
- No correlation between medication /disease activity and B-mode scoring results or Doppler scoring was found.

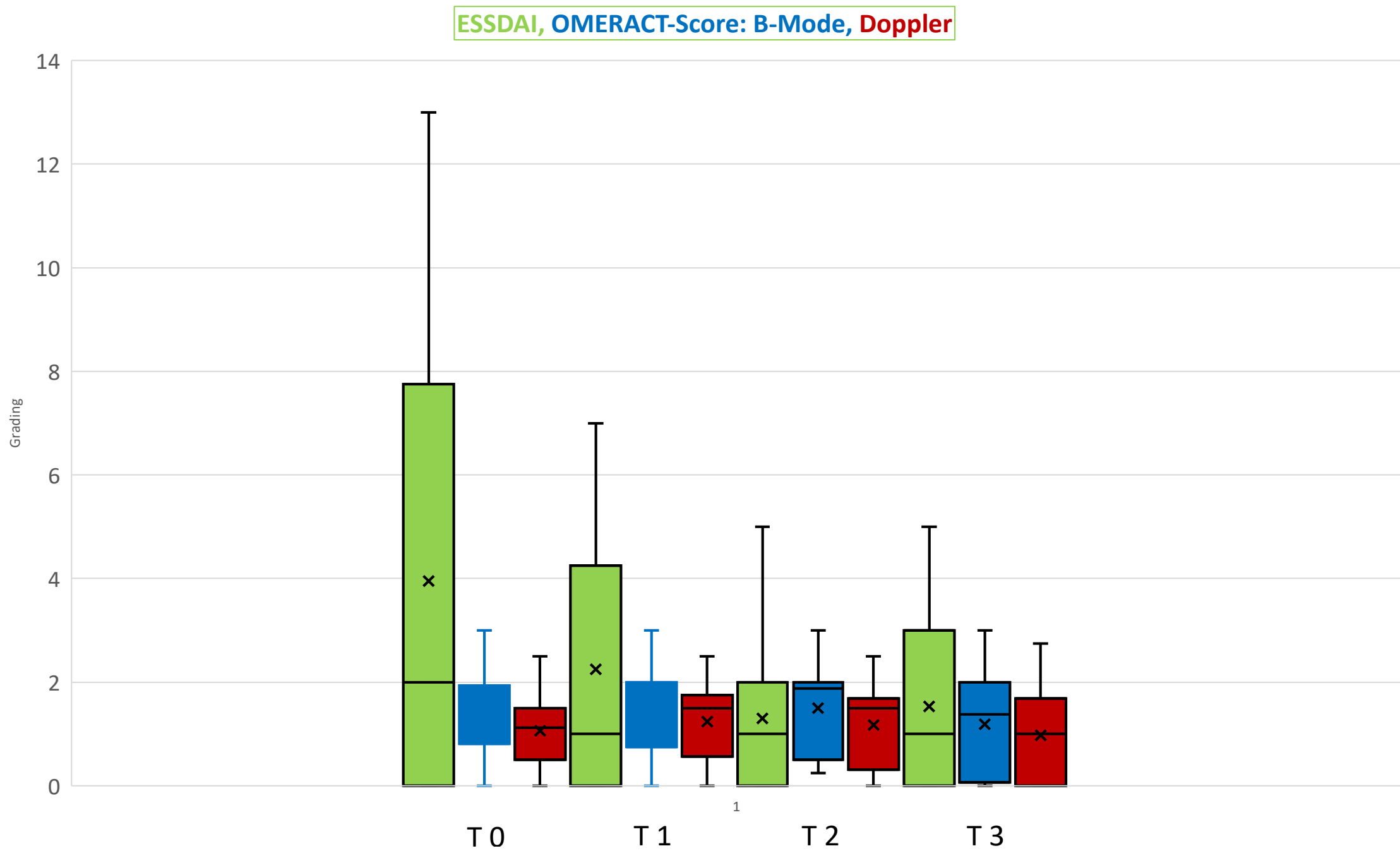


Figure 1: ESSDAI, Omeract and Doppler scores (mean) over time line t0-t3

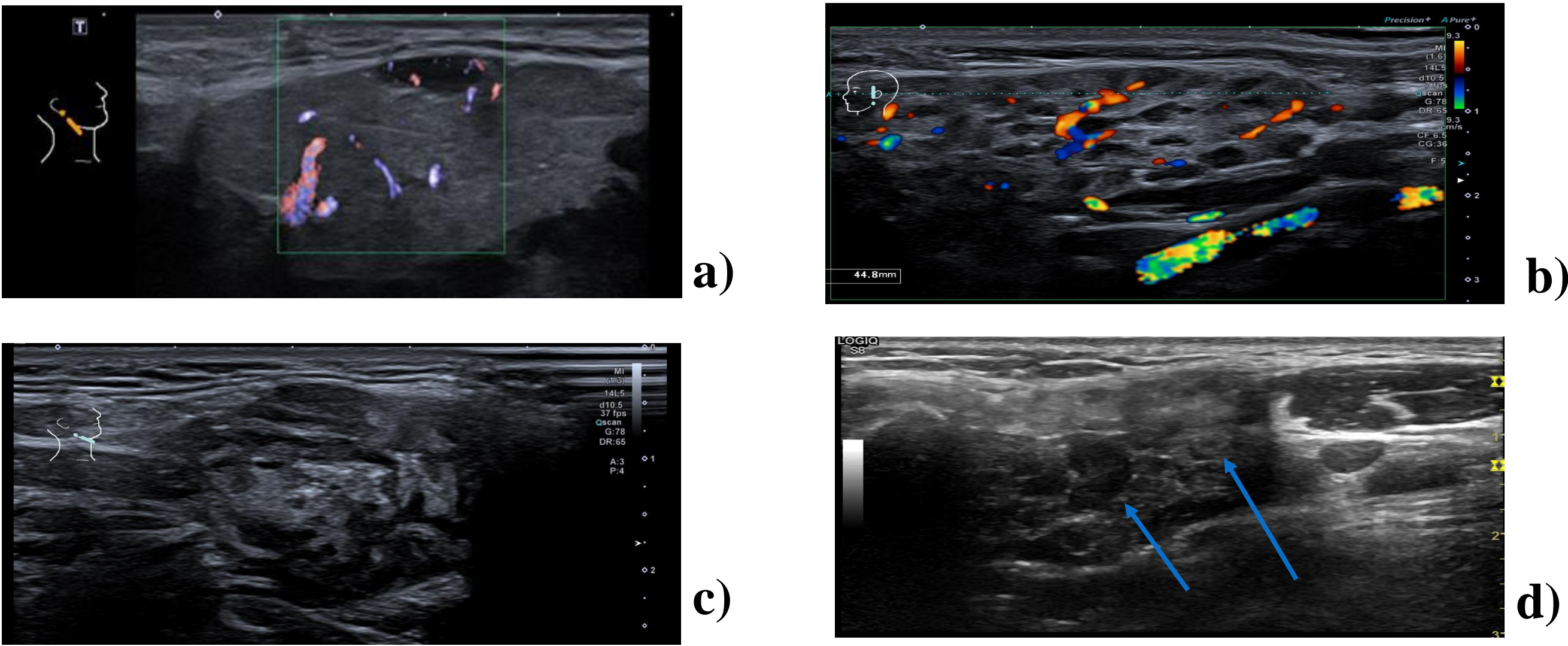


Figure 2: a) vascular signals in submandibular gland b) typical anechoic areas parotidal c) diffus morphologic changes in submandibular gland d) focal morphologic changes parotidal

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