

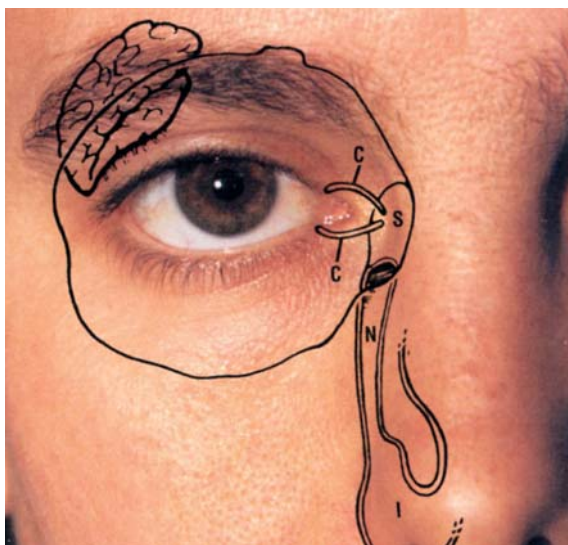
Lacrimal gland ultrasound

Niki Koutrouza-Tavlaridis and Ayman Elzarka

Introduction

The lacrimal gland is located at the supratemporal orbit, it consists of two lobes, the orbital lobe and the much smaller palpebral lobe. Only the palpebral lobe can be visualised clinically. Hence, disease processes, which only affect the orbital lobe, can only be detected later in the course of these conditions.

Figure 1 The lacrimal gland



Materials and methods

The study group was formed of 50 volunteers, 27 females and 23 males. The mean age was 40.2 years ± SD 12.8. The age range was 20-64 years. We imaged 100 normal lacrimal glands.

Ultrasound examination of the lacrimal glands was performed using a high frequency compact linear 10-5 MHz transducer on a Philips 5000 machine. B-mode and colour Doppler were performed.

The volunteers were positioned in the supine position with their eyes closed. The probe was placed in the upper outer portion of the upper lid, They were asked to 'look' away from the side the lacrimal gland was imaged. Sterile gel was used while scanning.

Images were obtained in the sagittal and transverse planes in relation to the anatomic axis of the gland. Three dimensions were recorded of each gland and calculation of the gland volume was undertaken.

The lacrimal artery was also identified with colour Doppler. A spectral trace was recorded. Peak systolic and end diastolic values were established.

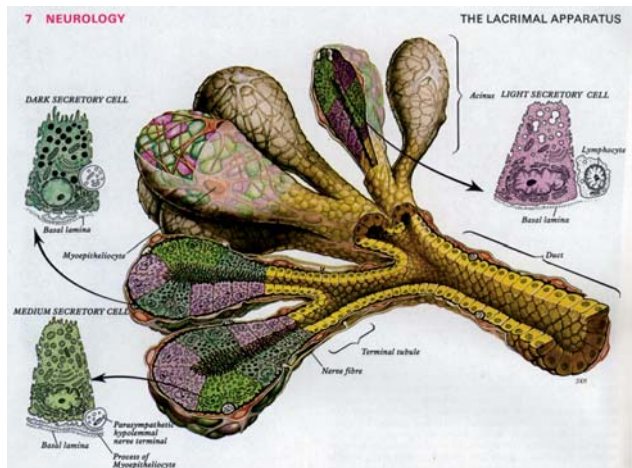
Table 1 normal lacrimal gland volumes

Volume	Mean volume	Range
Male	0.19 cc ± SD 0.02	0.06-0.5 cc
Female	0.17 cc ± SD 0.15	0.01-0.54 cc

Peak systolic velocity	Mean	Range
Male	16.49 cm/s ± SD 6.28	6.0-32.0 cm/s
Female	13.38 cm/s ± SD 5.	4.7-27.8 cm/s

End diastolic velocity	Mean	Range
Male	5.08 cm/s ± SD 2.33	1.6-11.8 cm/s
Female	4.19 cm/s ± SD 2.16	1.5-10.3 cm/s

Figure 2 Structure of the lacrimal gland



Results

We found that there is no statistically significant difference between the mean volume, peak systolic or end diastolic of the right and left lacrimal gland in either female or male subjects.

In female subjects, the mean volume of the lacrimal gland is 0.17 cc ± SD 0.15 and the range is 0.01-0.54 cc. The median volume is 0.1 cc.

In male subjects the mean volume of the lacrimal gland is 0.19 cc ± SD 0.12 and the range is 0.06-0.5 cc. The median volume is 0.13 cc.

However, we found that difference in the median values of lacrimal gland volume between the two groups (male and female) than would be expected by chance; there is a statistically significant difference (p = 0.014).

Correspondence to
 Niki Koutrouza-Tavlaridis GDU AMS
 30 Minerva Ave
 N Balwyn Vic 3104
 Ayman Elzarka FRANZCR

RANZCOG/ ASUM Beresford Buttery Travel Grant 2004

Following consideration of the Scholarly Selection Committee and ratification by the Board of Directors of the RANZCOG Research Foundation, the award of the 2004 Beresford Buttery Travel Grant will be made to Dr Jodie Dodd of the Department of Obstetrics and Gynaecology at the University of Adelaide.

Dr Dodd's study visit will be a two-month visit to Bristol University, Queen Charlotte's Hospital and Queen's Medical Centre, United Kingdom to gain experience in high risk maternal fetal medicine units, with a view to establishing a maternal fetal medicine unit at the Women's and Children's Hospital Adelaide.

The Scholarship Committee was assisted on behalf of ASUM by Professor Lachlan de Crespigny.

Applications for the 2005 Beresford Buttery Travel Grant will be advertised in April 2004.

This grant is distinct from the ASUM Beresford Buttery Overseas Traineeship which is awarded annually and is sponsored by GE Medical Systems Ultrasound.

Applications for the 2004 ASUM Beresford Buttery Overseas Traineeship will be advertised in the February Bulletin.

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tel +61 2 9958 7655
fax +61 2 9958 8002
email education@asum.com.au

There is also a statistically significant difference ($p = 0.008$) between the mean peak systolic velocities of the lacrimal gland artery in female subjects ($13.38 \text{ cm/s} \pm \text{SD } 5.3$) and male subjects peak systolic velocities ($16.49 \text{ cm/s} \pm \text{SD } 6.28$). Similar statistically significant difference ($p = 0.024$) is found between the median end diastolic velocities in female subjects (3.03 cm/s) and male subjects (4.75 cm/s). The mean end diastolic velocity of lacrimal gland

Figure 3 Sagittal scanning



Figure 4 Transverse scanning



artery in female subjects is $4.19 \text{ cm/s} \pm \text{SD } 2.16$. the range is $1.5\text{--}10.3 \text{ cm/s}$. In male subjects the mean end diastolic velocity is 5.08 cm/s and diastolic velocity is $5.08 \text{ cm/s} \pm \text{SD } 2.33$. The range is $1.6\text{--}11.8 \text{ cm/s}$.

Conclusion

Ultrasound examinations of the lacrimal gland can provide a fast, non-radiation modality for imaging. This could be helpful for detecting early disease processes which can affect the lacrimal glands, such as sarcoidosis lymphoma of Sjogren syndrome.

In this study we attempted to develop a standard normal value for ultrasound of the lacrimal gland and the Doppler signal of the lacrimal artery studied. We propose that the normal lacrimal gland volumes are those laid out in Table 1.

While our study group was small, we found that there is statistical difference in volume and Doppler signal between the normal lacrimal gland in male and female subjects.

Acknowledgement

Andrew Tshaikiwsky

References

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- 2 Williams, Warwick, Dyson, Bannister. 1999. Grey's Anatomy, page 1218, Churchill Livingstone, London.