Table 1 Comparison of Cox proportional hazards regression models, based on tumour dimensions and volume, as predictors of survival of patients with choroidal and ciliary body melanoma[a]

Variables on the model	*−2 log likelihood*	*Compared to the tumour volume model*		
		Difference in log likelihood	*Degree of freedom*	*P*[b]
All tumours (n = 289)				
Volume[c,d]	1228.0	—	—	—
LBD[e]	1222.7	−5.3	1	0.020[g]
Height[e]	1290.7	62.7	1	<0.0001[f]
LBD and height[e]	1216.5	−11.5	2	0.0031[g]
Tumours of the same size as in Richtig's study (n = 237)				
Volume[c,d]	1024.0	—	—	—
LBD[e]	1015.1	−8.9	1	0.0028[g]
Height[e]	1031.0	7.0	1	0.0080[f]
LBD and height[e]	1014.6	−9.4	2	0.0094[g]

[a]The smaller the log likelihood, the better the model.[3]
[b]Partial likelihood ratio test, χ^2 distribution.[3]
[c]Calculated as $(\frac{3}{4}\pi a^2 b) : 2$, where a is the tumour diameter divided by 2 and b the tumour height.[1]
[d]Continuous variable, per mm^3.
[e]Continuous variable, per mm; LBD, largest basal tumour diameter.
[f]In favour of the tumour volume model.
[g]In favour of the alternative model.

18 and mean 7.3 mm, range 2–14 mm, respectively). The statistical associations among this subset of 237 patients did not change (LBD plus height *vs* volume, $P = 0.0094$; LBD *vs* volume $P = 0.0028$, Table 1). The model which combined LBD and height, however, no longer differed statistically from that based on LBD alone ($P = 0.81$).

Our unselected data set, which was larger than Richtig's (145 *vs* seven tumour deaths), showed that replacing tumour LBD as a prognostic indicator with tumour volume probably is not worth the effort in daily practice. A caveat in Richtig's study is that when multivariate analyses are applied to small samples—and the sample size in survival analysis is the number of events, not the number of patients who enter the study—a model which cannot be generalised is easily obtained. All equations used for calculating tumour volume so far are rough approximations.[1,4–6] If true tumour volumes will be reliably obtained by imaging in the future, our conclusion should be reassessed.

References

1 Richtig E, Langmann G, Mullner K, Richtig G, Smolle J. Calculated tumour volume as a prognostic parameter for survival in choroidal melanomas. *Eye* 2004; **18**: 619–623.
2 Kujala E, Mäkitie T, Kivelä T. Very long-term prognosis of patients with malignant uveal melanoma. *Invest Ophthalmol Vis Sci* 2003; **44**: 4651–4659.
3 Hosmer Jr DW, Lemeshow S. *Applied Survival Analysis: Regression Modeling of Time to Event Data*. John Wiley & Sons: New York, 1999.
4 Guthoff R. Modellmessungen zur Volumenbestimmung des Malignen Aderhautmelanoms. *Albrecht Von Graefes Arch Klin Exp Ophthalmol* 1980; **214**: 139–146.
5 Gass JD. Comparison of uveal melanoma growth rates with mitotic index and mortality. *Arch Ophthalmol* 1985; **103**: 924–931.
6 Li WJ, Gragoudas ES, Egan KM. Tumor basal area and metastatic death after proton beam irradiation for choroidal melanoma. *Arch Ophthalmol* 2003; **121**: 68–72.

E Kujala and P Toivonen

Ocular Oncology Service and Ophthalmic Pathology Laboratory, Department of Ophthalmology, Helsinki University Central Hospital, Haartmaninkatu 4 C, PL 220, HUS, Helsinki, FIN-00029, Finland

Correspondence: E Kujala
Tel: +358 9 47173131;
Fax: +358 9 47175100.
E-mail: emma.kujala@hus.fi

Eye (2006) **20,** 123–124. doi:10.1038/sj.eye.6701806; published online 28 January 2005

Sir,

Reply to E Kujala and P Toivonen

Malignant melanoma had always an unpredictable course. Even in the same entities clinical outcome varies largely as seen between Lentigo maligna melanoma and acral-lentiginous melanoma in cutaneous melanoma and between choroidal melanoma and ciliary body melanoma in uveal melanoma.

Despite the fact that largest tumour diameter is one prognostic indicator for choroidal melanoma, several authors have tried tumour volume calculation models, as the direct measurement of volume has not found the way into daily routine because of the necessity of special ultrasonic equipment.

The formula used in our calculation model was the half volume of a rotation ellipsoid, rotated around the y-axis, with $\frac{4}{3}\pi a^2 b$, limited to patients with choroidal melanoma, excluding ciliary body melanoma.

In our study, the thus calculated volume turned out to be superior as prognostic indicator than tumour diameter and tumour height.

As mentioned in the discussion, calculated volumes are only theoretical volumes and might be of value to

document the tumour regression after globe-preserving treatment and to consider the individual prognosis of the patient with regard to further adjuvant treatment models.

In multivariate analysis, however, it is not unlikely that different patient populations will yield different parameters as most significant predictors. This is particularly true in the case of highly correlated parameters such as tumour diameter and calculated tumour volume. Therefore, only the examination of larger patient cohorts will finally yield a general prognostic model.

E Richtig and J Smolle

Department of Dermatology, Medical University of Graz, Auenbruggerplatz 8, A-8036 Graz, Styria, Austria

Correspondence: E Richtig
Tel: +43-316-385-2371;
Fax: +43-316-385-2466.
E-mail: erika.richtig@meduni-graz.at

Eye (2006) **20**, 124–125. doi:10.1038/sj.eye.6701808; published online 28 January 2005

Sir,

Subacute subdural haematoma presenting with oculomotor nerve palsy, reduced vision, and hallucinations

Isolated oculomotor nerve palsies are a common presentation of ischaemic microangiopathy and intracranial aneurysms but represent an unusual presenting sign in spontaneous bilateral subacute subdural haematoma. These more commonly present with headache, fluctuating level of consciousness, and hemiparesis.

We report a case of subacute bilateral subdural haematoma presenting with a complete oculomotor nerve palsy, unilateral reduction in vision, and visual hallucinations in the absence of disturbed consciousness or other neurological findings.

Case report

A 73-year-old man presented to eye casualty with a 3-day history of headache and decreased vision in his left eye and a 2-day history of left ptosis. He also described formed visual hallucinations present upon closing his eyes. There was no history of trauma. He had a prior history of left sided nonarteritic anterior ischaemic optic neuropathy with vision having stabilised at 6/7.5 in this eye at his last clinic appointment 3 months previously. He also had a history of ischaemic heart disease, atrial fibrillation and hypertension and was taking warfarin.

On examination his Glasgow Coma Scale was 15/15, his visual acuity was 6/9 in his right eye and 6/60 in his left when his lid was lifted. He had a complete left ptosis with an unreactive dilated pupil and restricted ocular movements in keeping with a complete left third cranial nerve palsy. The left optic disc was pale (as previously noted with the old anterior ischaemic optic neuropathy) and the right optic disc was normal. Cranial nerve and peripheral nervous system examination were otherwise normal. A CT angiogram was performed in order to exclude a compressive lesion such as an intracranial aneurysm and demonstrated bilateral subacute subdural haematoma with fresh haemorrhage (Figure 1). He was admitted to hospital and his INR was 3.82. His INR was reduced with vitamin K. Bilateral frontal and parietal burr holes were performed with evacuation of haematoma under pressure. At 48 h after surgery the third cranial nerve palsy signs and visual hallucinations had resolved and the visual acuity in the left eye had returned to its previous level.

Comment

This case displays a number of unusual features. In particular, it represents an unusual presentation of subdural haematoma. Isolated third cranial nerve palsies are classically associated with ischaemic

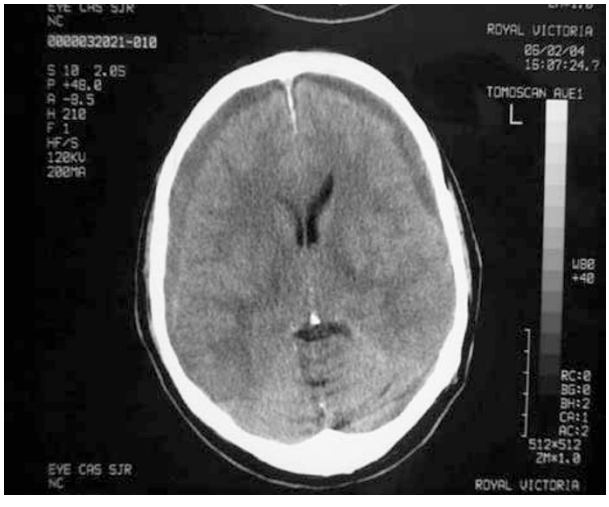

Figure 1 CT brain showing bilateral subacute subdural haematoma.