

Clinical and histopathological study investigating the expression of oestrogen and progesterone receptors (ER and PR) in leiomyosarcomas (LMS)

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Introduction

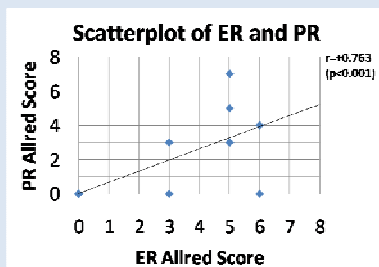
Treatment options in advanced LMS are limited. There has been interest in the expression of ER and PR in LMS as potential treatment targets. 63% of uterine LMS are reported to be ER+ and 23% of extra-uterine LMS.¹ There have been several case reports on the use of hormone therapy in LMS,^{2,3} but no prospective clinical trials have been performed. ER and PR expression may merely be surrogate markers for tumour grade and inherently associated with a better prognosis. In this clinical and histopathological study, our aim was to assess the expression of ER and PR in both uterine and extra-uterine LMS and correlate receptor expression with known prognostic factors.

Methods

LMS specimens from 2004-2009 were identified from Sheffield Teaching Hospitals pathology archives. Standard immunohistochemistry protocols were used for ER and PR staining using Vector antibodies (VP-E613 and VP-P976) at 1:40 dilution with secondary antibody at 1:250. Breast tissue was used as a positive control. Tumour staining was assessed using the Allred scoring system, combining a score for proportion of positively staining cells with a score for intensity of staining. Clinical data was obtained by a review of patient's medical records.

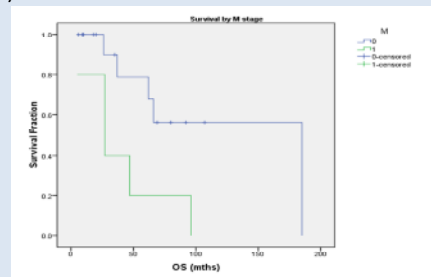
Results

55 LMS specimens were identified from the pathology archive. To date 29 specimens from 27 patients have been examined. 24% (7/29) were ER positive and 17% (5/29) PR positive. ER and PR expression were strongly correlated; $r = +0.763$ ($p < 0.001$).



Clinical data is available on 22 patients. This shows a median age at presentation of 67 yrs (range 38-84) with a female: male ratio 2.5:1. Tumour sites included 41% (9/22) gynaecological (mainly uterine), 23% (5/22) cutaneous, 18% (4/22) retroperitoneal, and 9% (2/22) extremity; in addition 1 small bowel and 1 bladder LMS. Clinical data is available for 6 of the ER positive specimens. 100% (6/6) were from females and (5/6) were uterine ($p = 0.013$).

T1 stage disease was associated with a better PFS than T2 disease; median PFS 87 and 34 months respectively ($p = 0.041$). Metastatic disease at presentation was associated with a worse OS. Median OS for M0 and M1 disease were 66 and 27 months respectively ($p = 0.011$).



Surgical R0 resection was associated with a better PFS and OS than R1 (see table). ER and PR expression did not correlate with age, tumour grade, stage, progression free survival (PFS) or overall survival (OS).

	PFS (median)	OS (median)
R0	48 months	96 months
R1	6 months	5 months
	$p < 0.001$	$p < 0.001$

Conclusion

ER and PR expression in this dataset appeared similar to other published series.¹ PR expression is a known function of ER; the strong correlation found in this series therefore indicates ER expression when present is functional, and a suitable therapeutic target. This series of patients will be further developed including comparison of ER α and β expression. Data from this study will be used to develop a prospective phase II study investigating the role of aromatase inhibitors in advanced LMS.

References

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