

the relationship between the NSCLC neuroendocrine markers and post-operative survival.

**Findings:** The subtypes of NSCLCs included in the study were 54% squamous-cell carcinomas (SCCs), 32.5% adenocarcinomas, and 11.5% large-cell lung carcinomas (LCLCs). 10.2%, 17.3%, 15.1%, and 7.4% of NSCLC tissue demonstrated focal to almost diffuse strong cytoplasmic staining of the tumour cells with CgA, SYN, HDC, and NSE, respectively. Assessing individual subtypes showed that 3.8%, 5.1%, 6.5%, and 1.8% SCCs, 13.3%, 17.3%, 20%, and 9% adenocarcinomas, and 21.3%, 28%, 33%, and 16.6% LCLCs demonstrated positive staining with CgA, SYN, HDC, and NSE, respectively. HDC expression was stronger and more sensitive than CgA, SYN, and NSE ( $p = 0.0063$ ). Multivariate analysis showed that the NSCLC patients with neuroendocrine markers had significantly shorter survival ( $p = 0.031$ ). The following factors were related to survival: lung-cancer histological differentiation ( $p = 0.0057$ ), clinical stage ( $p = 0.001$ ), and neuroendocrine markers reaction ( $p = 0.072$ ).

**Interpretation:** Neuroendocrine markers in NSCLC are significantly associated with cancer-cell differentiation and post-operative survival. These markers should be applied clinically as prognostic factors for post-operative survival of NSCLC patients.

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### P32 EXPRESSION OF BCL-2 ONCOPROTEIN IN WOMEN OF REPRODUCTIVE AGE WITH UTERINE SMOOTH-MUSCLE TUMOURS IN PAKISTAN

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**Background:** BCL-2 oncoprotein has an important role in cell development, maturation, and replication by reducing the requirement for growth factors, and acts as an anti-apoptotic factor in various neoplastic processes. This study investigated immunohistochemical expression of BCL-2 protein in uterine leiomyomas, smooth-muscle tumours of uncertain malignant potential (STUMP), and leiomyosarcomas (LMS), in female patients of child-bearing age. The correlation between BCL-2 expression and various clinicopathological parameters was assessed to evaluate its prognostic value.

**Methods:** A total of 66 female patients (mean age 37 years, SD 4.5) presenting with uterine leiomyomas ( $n = 42$ ), STUMP ( $n = 18$ ), and LMS ( $n = 6$ ) from July, 2005, to July, 2006, at the departments of Gynecology and Obstetrics in tertiary-care hospitals in Lahore, Pakistan, were included. Paraffin-embedded tissues of these patients were subjected to BCL-2 immunohistochemistry. Findings were compared and correlated with different clinicopathological parameters. Clinical information, including follow-up data until July, 2010, was obtained from the database of the hospitals.

**Findings:** Positive BCL-2 immunostaining was observed in two of six patients with LMS, 11 of 18 with STUMP, and 39 of 42 with leiomyomas. Frequency of BCL-2 expression and staining inten-

sity were significantly different between LMS and leiomyoma ( $p < 0.05$ ), as well as STUMP and leiomyoma ( $p < 0.05$ ), but not between LMS and STUMP ( $p > 0.05$ ). No significant association was found between BCL-2 immunostaining and tumour size, age, menstrual history, parity, infertility, contraceptive measures, or family history of neoplasms. Patients with uterine LMS who had BCL-2 positive tumours showed less vascular-space involvement and longer overall survival than patients with BCL-2 negative tumours ( $p < 0.05$ ).

**Interpretation:** Expression of BCL-2 oncoprotein is more frequent and strong in leiomyomas than in LMS and STUMP. Stronger BCL-2 expression in benign leiomyomas and the better clinical outcome of BCL-2-positive LMS indicate that this protein is a good prognostic factor. Larger studies are needed to establish BCL-2 as a routine marker for improved prognosis in malignant uterine smooth-muscle tumours.

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### P33 PREDICTION OF PATHOLOGICAL GRADE OF ASTROCYTOMAS USING MRI - A NEW METHOD VERSUS CLINICIAN PERFORMANCE

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**Background:** Astrocytoma is the most common glioma and has poor prognosis, affected by treatment strategy and pathological grading. Pre-operative assessment of grades is difficult. The aim of this study was to evaluate a support vector machine (SVM) model to help clinicians predict grading of astrocytomas.

**Methods:** 106 patients were recruited at our hospital between January, 2008, and April, 2009. Two clinicians read MRIs and scored the appearance of astrocytomas, and a support vector machine (SVM) model was constructed. From clinicians' predictions, predictions of the SVM model, and predictions of clinicians with the SVM model, three receiver operating characteristic (ROC) curves were created to discriminate low-grade and high-grade groups.

**Findings:** The area under the curve (AUC) for clinicians' predictions was 0.7881, which was significantly less than the AUC for the SVM model (0.9370,  $\chi^2$  8.62,  $p = 0.0033$ ) and the AUC for clinicians with the SVM model (0.8829,  $\chi^2$  13.46,  $p = 0.0002$ ). However, the AUCs of the SVM model and clinicians with the SVM model did not differ significantly ( $\chi^2$  1.63,  $p = 0.2011$ ).

**Interpretation:** The SVM model is a useful mathematical method that can help clinicians improve the accuracy of predicting pathological grade of astrocytomas.

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