

ANALYSIS OF CORRELATIONS BETWEEN CLINICAL,  
MORPHOLOGICAL, AND MOLECULAR FACTORS IN REGIONAL  
COLORECTAL CANCER METASTASIS

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**Objective:**

To evaluate the relationships between clinical, morphological, and molecular factors—specifically the expression of EGFR and VEGF—and their association with regional metastasis in colorectal cancer, aiming to improve prognostic accuracy and guide personalized treatment strategies.

**Materials and**

**Methods:**

This retrospective study analyzed data from 103 patients treated at the Russian Scientific and Practical Center of Oncology and Radiology between 2016 and 2022. Tumor tissue samples were collected and subjected to immunohistochemical analysis to assess EGFR and VEGF expression, defined as positive when over 10% of tumor cells showed intense staining. Clinical and morphological data, including the number of affected lymph nodes, invasion degree, and T-stage, were collected. Statistical analysis included chi-square, Fisher's exact test, and calculation of odds ratios using SPSS software to determine correlations between factors and recurrence risk.

**Results:**

The analysis revealed significant correlations: the number of involved lymph nodes ( $r=0.98$ ) and lymph node ratio ( $r=0.97$ ) showed very strong positive associations with disease severity. Extracapsular invasion correlated positively with the prognostic

marker ( $r=0.71$ ). There were modest correlations observed between other variables such as tumor size, age, and VEGF and EGFR expression levels, with weaker or no significant links. Notably, positive EGFR expression was observed in 74.5% of relapsed cases versus 52.1% in non-relapsed patients ( $p=0.018$ ), while VEGF positivity was noted in 80% of relapsed cases versus 50% in controls ( $p=0.001$ ). Odds ratios indicated that receptor-negative tumors were associated with a significantly lower risk of recurrence.

#### Conclusion:

The study confirms that clinical and morphological factors, particularly lymph node involvement and extracapsular invasion, are strongly correlated with disease progression in colorectal cancer. Positive EGFR and VEGF expression are associated with higher recurrence risk and may serve as valuable prognostic markers and therapeutic targets. Integrating these molecular and clinical parameters could enhance predictive accuracy and support the development of personalized treatment approaches. Further research is warranted to validate these findings and optimize strategic interventions.