

Research paper 15

Prognostic significance of categorizing lymphovascular invasion as nodal stage N1 in colorectal cancer

N.G.P.M Nanayakkara¹, M.C.R Rahumath¹, D.S Ediriweera², B.A.G.G Mahendra³, S. J. De S Hewavisenthi³, S.K Kumarage⁴, P.C Chandrasinghe⁴

¹ Postgraduate Institute of Medicine, University of Colombo, Sri Lanka

² Health Data Science Unit, Faculty of Medicine, University of Kelaniya, Sri Lanka

³ Department of Pathology, Faculty of Medicine, University of Kelaniya, Sri Lanka

⁴ Department of Surgery, Faculty of Medicine, University of Kelaniya, Sri Lanka

Introduction and objectives: The current concept is that positive nodal metastases indicate lymphovascular invasion (LVI) in colorectal carcinoma (CRC). The reverse situation has not been investigated. This study aims to analyse the prognostic significance of categorizing LVI-positive nodal negative cases as stage N1.

Methodology: The nodal stage, LVI status, and time since surgery to the last follow-up/death were obtained from the CRC database in patients undergoing surgical resection from January 2013 to May 2019, with follow-up until May 2024. Cox proportional-hazard models were used to identify features associated with survival. LVI-positive, N0 cases were transferred to N1 stage, establishing a new model (NM) for statistical analysis for comparison with the existing model prior to transfer i.e. the traditional model(TM).

Results: Of 137 participants, 41(29.93%) were LVI positive. Nodal stages were N0-65, N1-51, N2-21. Of the 96 LVI negative cases, 53 were in N0 stage and 43 were nodal positive. Among 41 LVI positive cases, 29 had nodal metastasis, while 12 did not. These 12 cases were transferred to N1. Hazard ratio for overall survival (HR) for LVI in TM was 3.094(95%CI, 1.782-5.372,p<0.0001) compared to 2.706(95%CI, 1.537-4.764,p=0.0006) in NM. HRs for N stage in the TM and the NM were 1.545(95%CI, 1.062-2.247,p=0.0229) and 1.760(95%CI, 1.169-2.648,p=0.0068), respectively. Transferring LVI positives changed the N stage coefficient p-value from 0.0229 to 0.006753 (Wald test) and increased concordance from 0.725 to 0.726 in NM.

Discussion and conclusions: The NM has better model evaluation parameters than TM. Transferring LVI positives from N0 to N1 improved prognosis accuracy, highlighting LVI as a predictive marker. This suggests investigating possible stage migration from N0 to N1, in N0 cases with positive LVI in a larger cohort..

Keywords: colorectal cancer, LVI, N stage migration, survival analysis

Corresponding author: Dr N.G.P.M Nanayakkara

¹ Postgraduate Institute of Medicine, University of Colombo, Sri Lanka

gpmnanayakkara@gmail.com



This is an open access article licensed under a [Creative Commons Attribution-ShareAlike 4.0 International License](https://creativecommons.org/licenses/by-sa/4.0/). (CC BY-SA 4.0), which permits unrestricted use, distribution and reproduction in any medium, provided the original author and source are attributed and materials are shared under the same license.