

# Relationship Between Acute Phase Markers and Post-operative Pain in Laparoscopic Cholecystectomy: An Observational Study

March 3, 2023

**Background:** Many patients undergoing laparoscopic cholecystectomy are prone to developing acute and chronic post-operative pain.

The aim of the study is to show a possible correlation between pain and acute phase proteins in order to:

- predict the severity of pain;
- select most suitable pain relief therapy for the patient.

**Materials and methods:** The day after surgery, some serum markers are determined by a blood sample. The markers analyzed are:

- Leukocytes;
- C-reactive protein (CRP);
- D-dimer;
- Fibrinogen;
- Neutrophil-to-Lymphocyte Ratio (NLR).

Pain level is assessed using the NRS scale at different times:

- 1st post-operative day;
- 7th post-operative day;
- One month after surgery;
- Three months after surgery;
- Six months after surgery.

Other data collected for the study are: gender, age and BMI.

**SAP:** Statistical Analysis Plan was expressed as percentages, median, and range of values. Differences between continuous variables were analyzed with the Mann-Whitney U test, whereas differences between categorical variables were evaluated with the chi-square or the Fisher's exact test, when appropriate. Variables achieving statistical significance ( $P<0.05$ ) at univariate analysis were entered in a backward multivariate logistic regression model, removing the variable if  $P$  more than 0.10.  $P$  less than 0.05 was considered statistically significant. Statistical analysis was carried out with the SPSS software packaging (SPSS Inc., Chicago, IL), version 13.

## References

1. Rathee A, Chaurasia MK, Singh MK, Singh V, Kaushal D. Relationship Between Pre- and Post-Operative C-Reactive Protein (CRP), Neutrophil-to-Lymphocyte Ratio (NLR), and Platelet-to-Lymphocyte Ratio (PLR) With Post-Operative Pain After Total Hip and Knee Arthroplasty: An Observational Study. *Cureus*. 2023 Aug 20;15(8):e43782. doi: 10.7759/cureus.43782. eCollection 2023 Aug. PubMed ID: 37731439
2. Shu B, Xu F, Zheng X, Zhang Y, Liu Q, Li S, Chen J, Chen Y, Huang H, Duan G. Change in perioperative neutrophil-lymphocyte ratio as a potential predictive biomarker for chronic postsurgical pain and quality of life: an ambispective observational cohort study. *Front Immunol*. 2023 Apr 12;14:1177285. doi: 10.3389/fimmu.2023.1177285. eCollection 2023. PubMed ID: 37122722
3. Gonzalez-Callejas C, Aparicio VA, De Teresa C, Nestares T. Association of Body Mass Index and Serum Markers of Tissue Damage with Postoperative Pain. The Role of Lactate Dehydrogenase for Postoperative Pain Prediction. *Pain Med*. 2020 Aug 1;21(8):1636-1643. doi: 10.1093/pmed/pnz325. PubMed ID: 31845982