論 文 要 旨

Dietary Intake and subsequent risk of Colorectal Cancer (CRC) /
Colorectal Adenoma in Japan
using the Penalized Poisson Regression

（日本人における食事摂取と大腸癌・大腸腺腫

発症リスクの検討：罰則付きポアソン回帰による検討）

東京大学大学院　学際情報学府　学際情報学専攻

生物統計統計情報学コース

49-226610

田中　晴菜

Introduction: Colorectal cancer (CRC) is a heterogeneous disease, with an increasing incidence globally. Originating from the "adenoma-carcinoma sequence", understanding adenomatous polyps is crucial for CRC prevention. Since the roles of diet on colorectal carcinogenesis are inconsistent, understanding diet factors for CRC and colorectal adenoma remains essential.

Objective: This study aims to explore the risk factors of CRC and colorectal adenoma in the Japanese population, focusing on dietary intake. Additionally, Firth's approach to the Poisson model has been empirically examined to address inaccuracies.

Subjects and Methods: The analysis was conducted with CRC or colorectal adenoma incidence as the outcome, employing both Poisson regression and penalized Poisson regression. The data utilized in the analysis were obtained from St. Luke's International Hospital between 2015 and 2018. The number of subjects for CRC and colorectal adenomas was 52,518 subjects and 48,855 subjects, respectively. All analyses were stratified by gender and diabetes status.

Results: In CRC study, the consumption of meats and eggs decreased the risk in males, while no statistically significant differences were noted in females. In colorectal adenomas study, there were no significant differences depending on gender, although a significant association was found with soy product and fish intake in males without diabetes. Notably, penalized Poisson regression successfully calculated regression coefficients even in situations where Poisson regression was diverged.

Discussion: Although this study revealed unexpected correlations in several food consumption groups, similar results have been obtained in previous studies. Due to insufficient information on intake methods, deriving definitive conclusions based on the hospital-based questionnaire was challenging.

Conclusion: This study empirically demonstrated the utility of Firth's approach in Poisson regression, unveiled unexpected correlations. In CRC, meat and egg consumption exhibited a negative correlation, while colorectal adenomas showed a positive correlation with soy products and fish intake. Acknowledging the constraints of the current hospital-based questionnaire, further research is proposed, accounting for variations in incidence risk.