

中文題目：化學放射治療後升高的靜止心律和治療前較高的皮膚交感神經活性預測食道癌較差的預後

英文題目：Higher pretreatment skin sympathetic nerve activity and elevated resting heart rate after chemoradiotherapy predict worse esophageal cancer outcomes

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**Background:** Chemoradiotherapy (CRT), which might affect the autonomic system, is the mainstay therapy for advanced esophageal squamous cell carcinoma (ESCC). Autonomic dysfunction has been found to possibly lead to cancer mortality in those with elevated resting heart rates (RHR). Skin sympathetic nerve activity (SKNA) is a new method of stimulating electrical signals in skin to evaluate autonomic function from sympathetic tone. In this study, we investigated the association between changes in RHR and autonomic function and ESCC mortality.

**Methods:** Thirty-nine stage II-IV ESCC patients receiving CRT between March 2019 and November 2020 were prospectively enrolled and carefully selected, followed up and received the same meticulous supportive care. Serial RHR was recorded every two weeks from before CRT to eight weeks after CRT and average SKNA were recorded before and four weeks after CRT. All-cause mortality was defined as primary outcome.

**Results:** We found the RHR of ESCC patients to be significantly elevated and peaking at four weeks after CRT ( $p < 0.001$ ) and then to gradually decrease. Those with an elevated RHR above the cutoff level (18 beat-per-minute) at eight weeks after CRT had worse overall survival. In addition, those with higher baseline sympathetic tone (average SKNA  $\geq 0.86\mu\text{V}$ ) also had poor outcome.

**Conclusion:** Increased pre-treatment sympathetic tone and elevated RHR after CRT are alarm signs of poor ESCC outcome. Further exploration of the mechanisms

underlying these associations could potentially lead to intervention strategies for reducing mortality.