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# Study on relationship between genetic expression of BDNF and NRG-1 and myelinated nerve fiber density and cross-sectional area in thoracic sympathetic trunk of palmar hyperhidrosis

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**Objective:** To investigate the gene expressions of brain-derived neurotrophic factor (BDNF) and neuregulin (NRG-1) in thoracic sympathetic trunk and their relation to myelinated nerve fiber density and single myelinated nerve fibers cross-sectional area in palmar hyperhidrosis.

**Methods:** Fast red - fast green myelin sheath staining was used to show myelinated nerve fibers. Through the micro-image analysis system, 30 cases of myelinated nerve fiber density and single myelinated nerve fibers cross-sectional area were observed in T3 thoracic sympathetic trunk of patients with palmar hyperhidrosis. BDNF and NRG-1 gene expressions were also analyzed by RT-PCR method. 8 cases of non-palmar hyperhidrosis patients were included as control study.

**Results:** In T3 thoracic sympathetic trunk of patients with palmar hyperhidrosis, myelinated nerve fiber density and single myelinated nerve fibers cross-sectional area were significantly higher than that with non-palmar hyperhidrosis ($t=7.023$, $P<0.05$; $t=7.462$, $P<0.05$ respectively). The expressions of BDNF and NRG-1 in T3 thoracic sympathetic trunk of patients with palmar hyperhidrosis was $1.1760\pm0.02870$, $1.2161\pm0.07539$ respectively. In control group they were $1.0375\pm0.05379$, $1.0427\pm0.04357$ respectively. The former was significantly higher than the latter($t=9.940$, $P<0.05$) $t=6.195$, $P<0.05$ respectively. Conclusion: BDNF and NRG-1 gene over expression increased myelinated nerve fiber density and single myelinated nerve fibers cross-sectional area of thoracic sympathetic trunk in palmar hyperhidrosis. Thus transmission speed and ability of excitatory of thoracic sympathetic nerve have also increased. It may play a role in the pathogenesis of palmar hyperhidrosis.

## Biography

Zhan Hua-hui has completed his M.D. at the age 22 from Fujian Medical University. He is the director of thoracic surgery department in the first hospital of Fuzhou city. He is a board member of thoracic surgery society of Fujian Association of Integrative Medicine. He has published more than 10 papers in reputed journals.

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