Luncheon Seminar

**LS2 The effects of hot spring bathing for mental and physical health**

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**Background:** Our hospital is located in Beppu city, which bears the most hot spring fountain-heads in the world. Here we present two studies showing the therapeutic and preventive effects of hot spring bathing. Hot spring bathing has been reported to be therapeutically useful for mentally and physically pathophysiological conditions because of its thermal and pharmacological effects. (1) The verification of the therapeutic effect of pelotherapy for the patients with fibromyalgia. (2) The epidemiological study by a questionnaire with questions of past history of hot bathing and diseases including depression and lifestyle related diseases of citizens over 65 years old of Beppu city.

**Methods:** (1) Seven patients with fibromyalgia (age: 60-78 y.o.) were treated by pelotherapy for 30 days. The patients took mud-bathing at 40 °C for 10 minutes a day on weekday. Geriatric Dementia Scale (GDS; 15 for full score) and Face Scale (FS; 20 for full score) for systemic pain were evaluated before and after pelotherapy. (2) Twenty thousand Beppu citizens over 65 y.o. were sent the questionnaire including questions of the participants’ past history of diseases including cancers, apoplexy, ischemic heart disease, diabetes mellitus, asthma bronchiale, collagen diseases, etc. and of their habits of hot spring bathing. The logistic analysis was used for statistical analysis.

**Results:** (1) The mean GDS score and the mean FS score before pelotherapy were 6.6+2.5 and 12.9+5.1, and those after pelotherapy 3.3+1.3, 6.1+5.5, respectively. (2) We received filled-out questionnaires from 4,706 men and 6,352 women. Forty-eight percent of the replying participants take a hot spring bath daily. Age adjusted, hot spring users showed less rate of some diseases, All (daily % : non-daily % (p-value), Ischemic heart disease 6.2 : 7.2 (0.047), Apoplexy 2.0 : 3.1 (<0.001), Hypertension 36.2 : 38.5 (0.016), Arrhythmia 7.9 : 9.5 (0.004), Bronchial Asthma 3.0 : 4.4 (<0.001), Diabetes Mellitus 12.4 : 14.2 (0.006), Renal disease 2.9 : 3.9 (0.009), Depression 1.5 : 2.7 (<0.001)), Men (daily % : non-daily % p-value, Apoplexy 3.1 : 4.2 (0.045), Renal disease 3.8 : 5.4 (0.011)), and Women (Ischemic heart disease 3.8 : 5.1 (0.018), Apoplexy 1.1 : 2.3 (0.001), Arrhythmia 6.7 : 8.4 (0.011), Bronchial Asthma 2.9 : 4.6 (<0.001), Diabetes Mellitus 8.6 : 10.8 (0.004), Depression 1.6 : 3.3 (<0.001)).

**Conclusion:** Pelotherapy raises efficiently body temperature leading to relieve mental and physical stress, that is, depression and pain. The study with questionnaire showed that hot spring bathing may be beneficial for lowering incidents of some diseases with gender association. The results of both studies highlighted the physical and mental effects of hot spring bathing for disease-prevention and -therapy.

**Keywords:** Hot spring, Pelotherapy, Fibromyalgia, Mud-bathing