

## MULTIPLE-CHEMICAL SENSITIVITY: IS THIS CONDITION RELATED TO PAINFUL BLADDER SYNDROME?

### Hypothesis / aims of study

The pathogenesis of painful bladder syndrome (PBS) has not been determined. Because chemicals such as lipopolysaccharides, carbachol, and hydrochloric acid could induce the lower urinary tract symptoms, some chemical agents have been considered to be possible causes of PBS. However, there has been no clinical study concerning the relationship between exposure to chemical agents and PBS.

Recently, multiple-chemical sensitivity (MCS), a condition in which individuals have an acute hypersensitivity to low levels of chemicals found in everyday substances such as organophosphates, formaldehydes, and so forth, has been clinical and social issue. In spite of lack of abnormal clinical data, the patients show variety of symptoms such as general fatigue, headache, depression, decreased vision, gastrointestinal disorders, and also lower urinary tract symptoms. Therefore, we studied the relationship between painful bladder symptoms and MCS by means of questionnaire, which is simple but reliable modality for diagnosis of MCS.

### Study design, materials and methods

We enrolled the patients with PBS who visited our hospital from September to December 2005. They replied to a questionnaire for MCS named Quick Environment Exposure Sensitivity Inventory (QEESI) <sup>1) 2)</sup>. This questionnaire is consisted of 50 questions and patients were classified into four categories according to the criteria of severity and susceptibility of MCS as follows; "very suggestive" (high possibility of MCS), "somewhat suggestive"(possibly MCS), "problematic (suspected MCS)", and "not suggestive (definitely not MCS)". The results were compared with the data on surveillance of general Japanese population <sup>3)</sup>. Further, relationship between QEESI score and O'Leary-Sant PBS symptom index was analysed.

### Results

Sixty-three patients (58 females, 5 males; age: 21 -79; mean: 58 years old) were enrolled in this study. PBS symptom index was 11.7 (6 -20). Among the subjects, 14 cases (22.2%) were categorized as "very suggestive", 5 cases (7.9%) as "somewhat suggestive", 8 cases (12.7%) as "problematic", and 36 cases (57.1%) as "not suggestive. Mean PBS symptom index was 12.9, 12.9, 12.0, and 11.0 respectively in each category, showing no significant difference among four categories.

### Interpretation of results

Significantly high proportion (22.2%) of PBS patients showed "very suggestive" compared to the data on surveillance of general Japanese population (n=440), in which only 3.8% of subjects showed "very suggestive". These results showed that certain amount of patients with PBS, regardless of PBS symptom index, have hypersensitivity to chemical agents. On the other hand, "not suggestive" patients also accounted for as many fractions as Japanese population, suggesting that different pathogenesis might exist compared with "very suggestive" subjects.

### Concluding message

This is the first study to clarify the relationship between chemical hypersensitivity and PBS based on a questionnaire for MCS, although other proposed diagnostic modalities for MCS, such as chemicals challenge tests and several neurological tests, are to be examined.

In conclusion, this study has shown that hypersensitivity to chemicals is one of the possible factors to develop painful bladder symptom. Based on our data, we should take care of patient's environment, especially status of chemical exposure in regard of PBS. Isolation from causative chemicals might be a simple and novel treatment for some refractory PBS patients.

### References

- 1) Toxicol. Ind. Health 15: 286 -396, 1999
- 2) Toxicol. Ind. Health 19: 41 -49, 2003
- 3) Jpn. J Clin. Ecol. 13: 110 -119, 2004

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### **DISCLOSURES:**

**NONE**

### **HUMAN SUBJECTS:**

**This study was approved by the Ethics Committee of Kyoto City Hospital and followed the Declaration of Helsinki Informed consent was obtained from the patients.**