Prediction of postoperative nausea vomiting, using Japanese traditional Kampo medicine, “Water Stagnation Score”

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Background and Goal of Study:

Japanese traditional Kampo medicine has a unique methodology of human body constitution classification. Kampo medicine specific concept, “*Water stagnation*” is considered as a status of abnormal fluid distribution state with the body feature tendency of accumulating unnecessary body fluid and blunting fluid elimination function, and has been reported to be a high risk for nausea and vomiting. The purpose of this study is to clarify whether water stagnation score (WSS), which is calculated using a self-assessed questionnaire, is useful to predict PONV for the gynecological patients.

Water Stagnation Score	
Questionnaire	Score
Heaviness of the body	3
Throbbing headache	4
Heaviness of the head	3
Motion sickness	5
Dizziness	5
Lightheadedness upon standing	5
Watery nasal discharge	3
Excessive salivary	3
Foamy sputum	4
Nausea/vomiting	3
Hyperdynamic bowel sound	3
Morning stiffness	7
Splashing sound in epigastric region, edematous	15
Pleural effusion, cardiac effusion, ascites	15
Brisk pulsation in the supra-umbilical region	5
Watery diarrhea	5
Oliguria	7
Polyuria	5
The sum score was calculated as the Water stagnation score. If the extent of each symptom is slight, half of the score is given. WSS ≥ 13 is considered as the positive water stagnation state.

Figure. 1
WSS was 7.3±7.8 in control group (PONV -), and 10.4±7.0 in PONV group (p=0.073).

Figure. 2
ROC analysis; PONV within 6 hours postoperatively. Sensitivity was 0.86 and specificity was 0.32, and area under curve was 0.68 with cut off WSS value of 13.

Materials and Methods:

WSS was preoperatively assessed. Inclusion criteria were 1) elective gynecological surgery, 2) aged 20 to 50 years, and 3) scheduled expected procedure time > 2 hours. Exclusion criteria were 1)ASA-PS 3 or more, 2) body mass index 35 or more, 3) pregnant and lactating women, 4) regular use of any Kampo medicine, and 5) use of steroids, immunosuppressive or chemotherapy medicines. PONV incidence during first 6 hours after general anesthesia was assessed, and patients were divided into PONV group or control group (no PONV). WSS was compared between groups. The unpaired t-test or Mann-Whitney U-test was applied.

Results and Discussion:

Eighty three patients were studied, and 53 patients developed PONV in the first 6 hour postoperatively. WSS was 7.3±7.8 in control group, and 10.4±7.0 in PONV group (p=0.073). Incidence of water stagnation state (WSS≥13), was 3.4% in control group and 20.1% in PONV group (p=0.01). In ROC analysis, sensitivity was 0.86 and specificity was 0.32, and area under curve was 0.68 with cut off WSS value of 13.

	PONV -	PONV+	
	n=30	n=53	p-value
Age (years)	37.5±7.8	38.8±8.0	0.47
Height (cm)	158±7.7	159 ± 4.4	0.51
Body weight (kg)	60.3 ±13.8	55.4 ±9.5	0.048
BMI (kg/cm²)	24.6±5.7	22.0 ±3.7	0.025
Preop systolic Blood pressure (mmHg)	122±17	110±15	0.008
Preop body temperature	36.7±0.3	36.6±0.4	0.4
Water stagnation score	7.3±7.8	10.4±7.0	0.073
WSS > 13	1 (3.4%)	11 (20.1%)	0.01
Apfel score	3 [4, 3]	3[3, 3]	0.15
Motion sickness	30%	54.7%	0.03
Previous PONV	0%	9.40%	0.08
Dizziness	10%	34%	0.015
Smoking history	23%	26%	0.75
Laparoscopic	46.7%	45.3%	0.89
Procedure Time	118±42	139±53	0.07
Blood loss (g)	138±267	229±367	0.27
Remifentanyl Dose (mg)	3.9±1.1	4.2±1.4	0.33
Fentanyl Dose (mcg)	545±94	520±97	0.29
Sevoflurane (mL)	37.7±17.0	35.6±17.5	0.6

Conclusion:

As WSS can classify the human physical constitution more precisely than Apfel score, WSS is a useful predictor of PONV for gynecological surgical patients.