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## The pain intensity level in adolescents with primary dysmenorrhea

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### summary

The purpose of this study was to investigate the pain intensity level with different scales and to correlate these data with clinical symptoms in dysmenorrhea. Findings indicated that all scales were useful for assessing dysmenorrhea. Pain threshold and tolerance was evaluated using a pressure algometer. No correlation was found between pressure pain values and visual, numerical scale values. Back pain and fatigue were correlated with pressure pain values and there was also a correlation between dizziness and visual, numeric scales.

*Key words:* Primary dysmenorrhea; visual analogue scale; numeric scale; pressure pain scale; clinical symptoms.

### introduction

Primary dysmenorrhea is defined as pain during menses in the absence of an identifiable cause.<sup>1</sup> Dysmenorrhea occurs in about 15–50% of adolescent girls and is the leading cause of school and work absence in this age group.<sup>2</sup> The menstrual pain can be associated with myometrial hypercontractility, which causes uterine ischemia. Only 15% of these girls consult a physician for their dysmenorrhea.<sup>3</sup> Dysmenorrhea may be classified as follows: mild — pain occurs on the first day of menses with few associated symptoms; moderate — pain on the first 2 to 3 days, often associated with other symptoms; severe — intense, cramping pain lasting 2 to 7 days, usually disabling and accompanied by gastrointestinal symptoms.<sup>3</sup> Typically, pain is sharp, spasmodic, suprapubic. It may radiate to the upper thighs or back and begin a few hours before the onset of menstrual flow. In more severe cases, the pain may be accompanied by gastrointestinal or vascular symptoms (e.g. vomiting, diarrhea, headache, fatigue). Although there are many studies about dysmenorrhea, no studies have been found which compared visual analog scale (VAS), numeric scale, pressure pain and clinical symptoms in dysmenorrhea. VAS has been used more frequently in the last ten years. VAS and numeric scale evaluate subjective pain,<sup>4</sup> while measurement of pressure pain with a pain algometer is an objective method. Pressure pain threshold (PPT) and tolerance (PPTO) are commonly measured on trapezius muscle, palmar muscle and thigh of both sides using a pressure algometer.<sup>5</sup> The purpose of our study was to measure pain in girls suffering from dysmenorrhea and to investigate a possible correlation between clinical and experimental findings.

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**Table I.**

Demographic characteristics of the subjects

	Mean $\pm$ SD	Range
Age (yr)	15.6 $\pm$ 1.4	13–19
Height (cm)	158.1 $\pm$ 5.7	147–170
Weight (kg)	52.5 $\pm$ 5.7	43–69
BMI (kg/m <sup>2</sup> )	21.0 $\pm$ 1.9	18–26
Years after menarche	3.6 $\pm$ 1.6	1–8

**Table II.**

Visual analogue scale (VAS) and numerical scale

VAS (cm)										
0										10
No pain										Worst imaginable pain
Numerical scale										
0	1	2	3	4	5	6	7	8	9	10
No pain										Worst imaginable pain

## patients and methods

Twenty-seven patients were introduced into this study: all suffered from dysmenorrhea. The judgement on the severity of dysmenorrhea was based on factors such as working ability, systemic symptoms and use of analgesics. Systemic symptoms such as nausea, vomiting, nervousness, fatigue, dizziness, diarrhea, abdominal pain, backpain, thigh pain and headache were recorded. Participants gave their permission to use the data in this study. All the subjects evaluated their subjective pain by VAS and by a numeric scale. Characteristics of the subjects are shown in Table I.

Patients with secondary dysmenorrhea were excluded from the study. They did not take drugs during the experimental period.

One researcher controlled VAS and the numeric scale, and another, blind to these results measured pain threshold and tolerance. The VAS was a 10 centimeter horizontal line. At the two ends, 'no pain' and 'worst imaginable pain' were written. As regards numeric scale, patients had to quantify their pain from score 0 to 10, with 0 meaning no pain and 10 representing the worst pain the patient could imagine (Table II). Measurements of pressure pain were carried out with a pressure algometer. Tests were performed on both sides of the trapezius muscle, palmar muscle and anterior proximal thigh. The algometer registered the force (in kilograms per square centimeter) that was applied to the tissue via a small rubber probe. The average of three measurements of PPT and PPTO were recorded. The rubber tip of the algometer was placed exactly over the target points. The axis of the shaft was maintained exactly perpendicular to the examined surface. The algometer was calibrated before examining each subject.

### Statistical analysis

The SPSS 11 for Windows statistical package was used for statistical analysis. Spearman's analysis of variance was used to compare pain scores with clinical symptoms in dysmenorrhea as data were non-parametric. A  $p$ -value  $< 0.05$  was considered statistically significant.

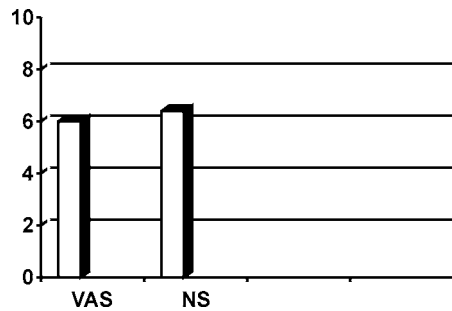
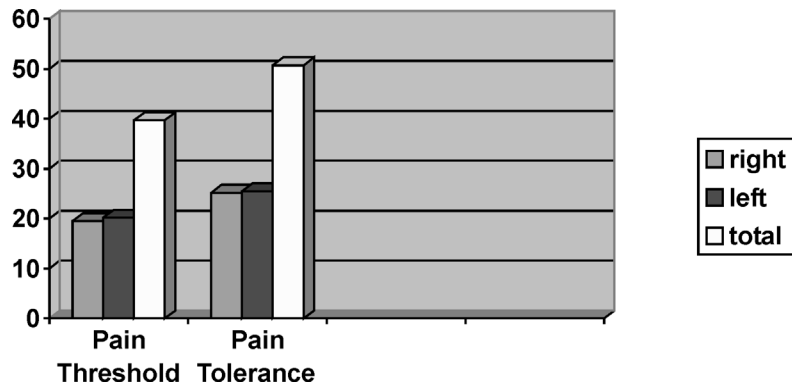
## results

Abdominal pain was the commonest reported symptom ( $n = 23$ , 85.2%). We did not find any patient who had suffered from diarrhea. Clinical symptoms are shown in Table III. A correlation between dizziness and VAS and numeric scales was found ( $r = 0.43$ ,  $r = 0.41$ ,  $p < 0.05$ ). There was also a significant correlation between fatigue and back pain, and PPT and PPTO ( $r = -0.40$ ,  $-0.42$ ,  $r = -0.38$ ,  $-0.38$ ,  $p < 0.05$ ). Seven patients always

**Table III.**

Clinical symptoms of primary dysmenorrhea in adolescents

	Number	Percent
Abdominal pain	23	85.2
Back pain	8	29.6
Thigh pain	5	18.5
Headache	2	7.4
Fatigue	16	59.3
Nervousness	15	55.6
Diarrhea	—	—
Vomiting	4	14.8
Nausea	3	11.1
Dizziness	6	22.2

**Figure 1.** Comparison of pain values. VAS: visual analogue scale. NS: numerical scale.**Figure 2.** Comparison of pressure pain intensity threshold and tolerance ( $\text{kg}/\text{cm}^2$ ).

used drugs for dysmenorrhea and four patients used them occasionally. Dysmenorrhea was mild in seven patients, moderate in seven patients, and severe in thirteen patients. VAS and numerical scale were correlated. No correlation was found between VAS or numerical scale and pressure pain. The mean pain intensity value was for VAS  $6.0 \pm 2.2$  cm, for numerical scale  $6.4 \pm 2.1$ , for PPT (right, left, total, respectively)  $19.5 \pm 4.9$   $\text{kg}/\text{cm}^2$ ,  $20.2 \pm 4.6$   $\text{kg}/\text{cm}^2$ ,  $39.7 \pm 9.3$   $\text{kg}/\text{cm}^2$ , and for PPTO (right, left, total, respectively)  $25.2 \pm 4.1$   $\text{kg}/\text{cm}^2$ ,  $25.5 \pm 4.8$   $\text{kg}/\text{cm}^2$ ,  $50.7 \pm 8.7$   $\text{kg}/\text{cm}^2$  (Figs 1 and 2).

## discussion

VAS and numerical scale have often been used to evaluate pain intensity, and both scales were used in this study as they have been shown useful in the evaluation of menstrual pain. Each scale has advantages and disadvantages. For example, the VAS is very precise, but some people have great difficulty understanding its use. The numerical scale, on the other hand, is convenient, but not analogic.

In a sample of Swedish school girls aged 14–19 years, 15% reported being unable to participate in normal activities, 10% reported school absence, and 5% reported that they had to stay in bed for dysmenorrhea. A minority of girls who missed work or school because of cramps consulted a doctor or a nurse.<sup>6</sup> The mechanisms of dysmenorrhea are unknown. It was supposed that prostaglandins are involved causing uterine contractions and ischemia, but studies on intrauterine pressure have not confirmed this hypothesis. It was also shown that dysmenorrheic adolescents had a longer latency of pain-evoked potentials.<sup>7</sup>

In our study, there was a significant correlation between visual analogue and numerical scales. We used a pressure pain test as an objective measurement. However, we did not find any relationship among VAS, numerical scale values, and pressure pain values. Similar results were reported by Kuczmeirczyk and Adams<sup>8</sup> and by Amodie and Nelson-Gray.<sup>9</sup> We have demonstrated that fatigue and back pain were correlated with pain thresholds and dizziness with visual analogue and numeric scales.

In our study, we have shown that objective and subjective pain measurements in dysmenorrhea are not correlated. We think that the self-report is the gold standard of pain measurements as many authors have already demonstrated.

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