〔ORIGINAL〕

Positive correlation between the face anxiety scale and the state anxiety inventory in elderly Dental patients

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Abstract

Anxiety is a state of uneasiness and apprehension, and is known to increase the intensity of pain experienced by patients. We have been using a newly developed ace anxiety scale (FAS) because the level of anxiety can conveniently be assessed in six grades, represented by six pictured faces, ranging from a smiling face to an anxious face. In the present study, in order to verify the reliability of the FAS in the elderly, the correlation between the FAS and the STAI was investigated in patients over 65 years of age.

Sixteen patients took a total of 32 tests, and 25 tests were recovered. Consequently, the correlation between the FAS and STAI was investigated by analyzing 12 tests taken by 9 subjects. The correlation between FAS at "now" and STAI state anxiety scores (both scores represented current anxiety levels). Statistical analysis revealed a positive correlation ($p < 0.05$, $R = 0.607$, $y = 35.423 + 4.458x$, $R^2 = 0.396$). According to the STAI assessment criteria, a FAS score of 1 or 2 points corresponded to "normal" ; 3 points to "high" ; and 4 or 5 points to "very high". The FAS is a test that can conveniently, accurately and quantitatively assess the state anxiety of elderly dental patients at perioperative period.

Key words : Face Anxiety scale, Anxiety, STAI, elderly patients, Dental.

Ⅰ. Introduction

Anxiety is a state of uneasiness and apprehension, and is known to increase the intensity of pain experienced by patients. Therefore, in order to provide pain-free medical care that allows patients to feel safe and comfortable, it is necessary to ascertain their anxiety levels. However, even a simple psychological anxiety test is fairly complicated, taking more than ten

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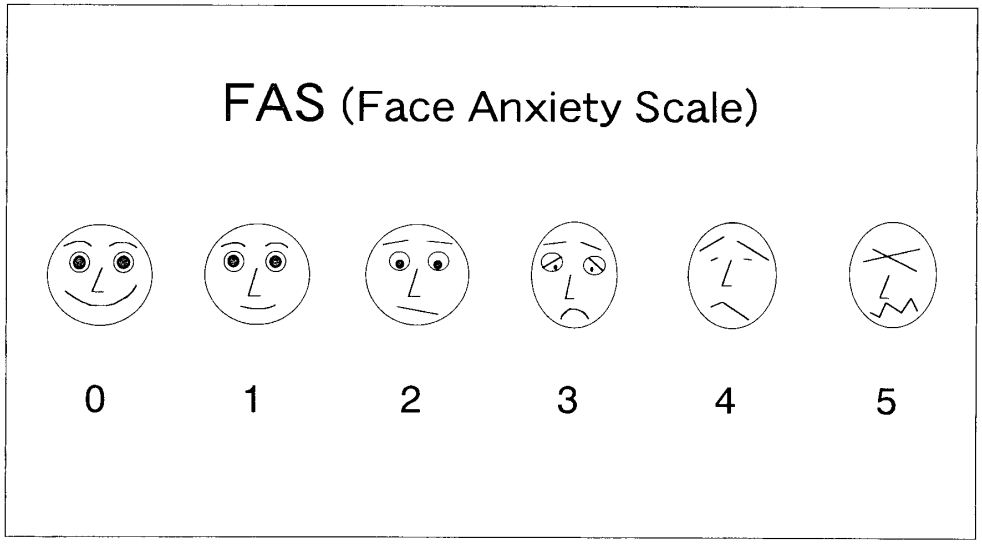

Fig. 1 FAS FAS is a 6 grade estimate, the minimum score is 0 and maximum score is 5.

minutes to complete, and some elderly patients are unable to appropriately answer all the questions. Therefore, We have been using a face anxiety scale (FAS) because the level of anxiety can conveniently be assessed in six grades, represented by six pictured faces, ranging from a smiling face to an anxious face. In 1995, we reported a positive correlation in adults between the FAS and the state-trait anxiety inventory (STAI-X, The Japanese version), which is a self-report psychological anxiety test[1].

In the present study, in order to verify the reliability of the FAS in the elderly, the correlation between the FAS and the STAI was investigated in patients over 65 years of age.

II. Subjects and Methods

1. Subjects

Subjects were patients over 65 years of age who underwent elective dental surgery (tooth extraction, cyst removal, etc.) under general anesthesia or conscious sedation between August 1995 and March 1997. Cancer patients were excluded from the present study.

2. Methods

Anxiety was assessed using the face anxiety scale (FAS), where the level of anxiety is

Female	State	- 51	50 - 42	41 - 31	30 - 22	21 -
	Trait	- 55	54 - 45	44 - 34	33 - 24	23 -
Level		V (very high)	IV (high)	III (normal)	II (low)	I (very low)
Male	State	- 50	49 - 41	40 - 32	31 - 23	22 -
	Trait	- 53	52 - 44	43 - 33	32 - 24	23 -

Table 1 STAI Valuation Basis of Anxiety Levels (Japanese version)

Enforcement	32 FAS&STAI (16 elder patients)
Recovered	25 (16) ; Recover rate 78.1%
Excluded	13 (11)
• Suspect of autonomic imbalance	4 (2)
• Incomplete { only FAS / only STAI / FAS and STAI }	7 (7) { 1 (1) / 4 (4) / 2 (2) }
• Cannot self-report	2 (2)
Subject	12 [9 ; 6 males / 3 females , Age : 71.3±4.4 (mean ± S.D.)]

Table 2 Recover rate and subject

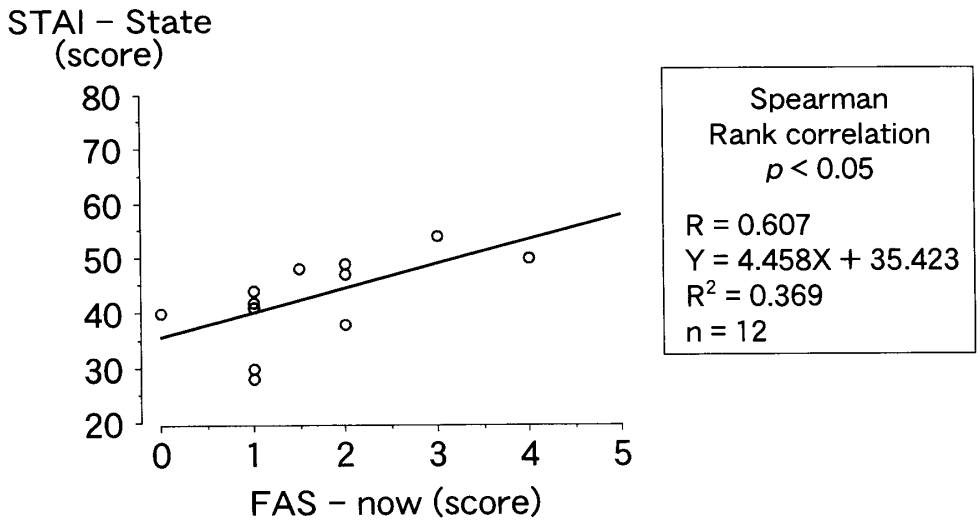

Fig. 2 Correlation between STAI state-anxiety and FAS in now

assessed in six grades, represented by six pictured faces, ranging from a smiling face to an anxious face[1](Figure 1) and the Japanese version of the state-trait anxiety inventory test (STAI-X)[3], which is a self-report test lacking time restrictions developed by Speilberger et al[2].

With the FAS, subjects circle one of the six pictured faces in order to indicate their anxiety levels.

With the STAI, the state and trait of anxiety are assessed. State anxiety represents the level of current anxiety that subjects are experiencing, while trait anxiety indicates the level of everyday anxiety, or disposition to experiencing anxiety. Each question is answered by selecting one of the four choices: 1 point is given for "not at all" ; 2 points for "somewhat" ; 3 points for "moderately so" ; and 4 points for "very much so". There are a total of 40 questions, 20 questions for the state anxiety scale and 20 for the trait anxiety scale. A total score is calculated for each anxiety scale : 20 points represent a "very low" level of anxiety, while 80 points indicate a "very high" level of anxiety. According to the STAI assessment criteria shown in Table 1, STAI scores are assessed for male and female subjects in five grades as follows : I "very low", II "low", III "normal", IV "high" and V "very high" (Table 1),. In each patient, anxiety was assessed before and after dental operation using the STAI and FAS. According to the STAI assessment methods, STAI tests having 3 or more unanswered or inappropriately answered questions were excluded.

3. Statistical analysis

Stat View version 5.0 (Abacus Concepts, Berkeley, CA, USA) was used to conduct statistical analysis by Spearman's rank correlation coefficient.

III. Results

1. Answers

Table 2 shows sixteen patients took a total of 32 tests, and 25 tests (16 patients) were

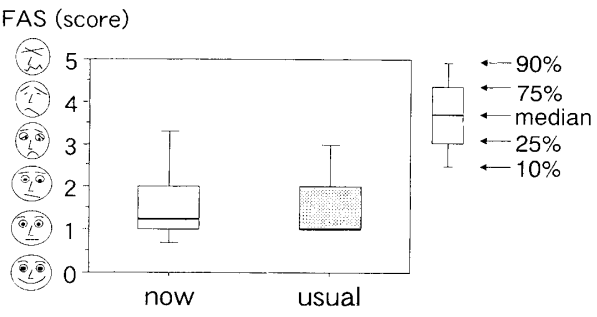

Fig. 3 Scores of FAS
Median value of FAS score in now was 1.25 and in usual was 1.00.

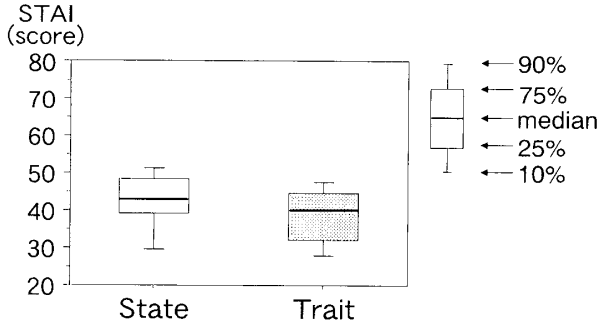

Fig. 4 Scores of STAI
Median value of STAI score in state-anxiety was 43.0 and in trait-anxiety was 40.0.

recovered. In addition, 13 further (11 patients) tests were excluded : 4 tests taken by 2 patients who were suspected of having autonomic imbalance or anthropophobia, and 7 incomplete tests taken by 7 patients (1 only FAS test taken by 1 patient ; 4 STAI tests taken by 4 patients ; 2 FAS and STAI test taken by 2 patients) and 2 STAI tests taken by 2 patients who could not self-report. Consequently, the correlation between the FAS and STAI was investigated by analyzing 12 tests taken by 9 subjects ; 6 males/3 females, the average age was 71.3±4.4 S. D. years old (Table 2).

2. FAS and STAI correlation

Figure 3 shows the correlation between FAS at "now" and STAI state anxiety scores (both scores represented current anxiety levels). Statistical analysis revealed a positive correlation ($p<0.05$, $R=0.607$, $y=35.423+4.458x$, $R^2=0.396$) (Figure 2). The median FAS score was 1.25 points, and the median STAI state anxiety score was 43.0 points. According to the STAI assessment criteria, a FAS score of 1 or 2 points corresponded to "normal" ; 3 points to "high" ; and 4 or 5 points to "very high". On the other hand, there was no correlation between the FAS at "usual" and STAI trait anxiety scale, which assesses levels of everyday anxiety (Figure 3, 4).

Ⅳ. Discussion

In the present study, in addition to 7 STAI tests that were not recovered, a total of 13 tests were excluded because subjects did not answer questions appropriately or failed to self-report. The STAI was thus shown to be a difficult test for elderly subjects to take. On the other hand, only one elderly person was unable to take the FAS before and after dental surgery.

A positive correlation was found between the FAS at "now" and STAI state anxiety scale ($p<0.05$). This suggests that the FAS can be clinically useful in accurately and conveniently assessing the state anxiety of elderly dental patients. However, the degree of the correlation between the FAS and STAI state anxiety scale in elderly dental patients was lower than that observed in adults in 1995 ($y=30.22+8.87x$, $R^2=0.69$).

When providing medical care that allows patients to feel safe and comfortable, it is necessary to appropriately assess their pain and anxiety levels. In a clinical setting, words and devices are used to assess pain intensity. Visual and numeric pain intensity scales are currently used[3,4]. However, to the best of our knowledge, there is no visual scale to assess anxiety levels. With the FAS, pictures of six faces, ranging from a smiling face to an anxious face, are arranged from left to right. The FAS is therefore much easier to understand than the conventional psychological tests, and because this test does not require any speech, elderly patients are readily able to complete it. This would also allow the test to be used for children who have not yet learned to read, dementia, mentally-handicapped. Furthermore, the FAS is an easy-to-use devise for healthcare professionals. Nevertheless, the scale must still be improved. The Visual Analogue Scale-Pain (VAS-Pain) developed by Aitken[5] is being used to assess the intensity of pain experienced by patients. With this scale, subjects indicate the intensity of pain along a 100-mm line, where "0" indicates no pain, while "100" indicates unbearable pain[6]. We are currently improving the FAS to conveniently, accurately and objectively assess the level of anxiety by having patients indicate anxiety on a 100-mm line. In the future, we need to consider making the FAS larger in order to facilitate elderly patients taking the test and to more easily visualize anxiety levels.

V. Conclusions

Among elderly dental patients, a positive correlation was found between the FAS developed by the writer and the STAI state-anxiety scale, the latter of which is a self-report psychological test. The results showed that the FAS at "now" score of 3 points corresponded to a high level of state anxiety, while an FAS score of 4, 5 points corresponded to a very high level of state anxiety. Therefore, the FAS is a test that can conveniently, accurately and quantitatively assess the state anxiety of elderly patients before and after dental surgery.

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