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Evaluation of the European Spondyloarthropathy Study Group (ESSG) classification criteria in a Chinese population

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ABSTRACT

Objective. *To evaluate for the first time in a Chinese population, the usefulness of the European Spondyloarthropathy Study Group (ESSG) criteria.*

Methods. *A total of 193 clinically diagnosed SpA patients were compared to 166 patients with other types of arthritis, using the parameters listed in the ESSG criteria.*

Results. *The sensitivity and specificity of the ESSG criteria in this Chinese population were high at 85.4% and 96.4% respectively.*

Conclusion. *The use of ESSG criteria for classifying SpA in Chinese will not lead to significant omission of SpA patients or inclusion of patients who do not have SpA.*

Introduction

SpA is a family of arthritis comprising at the minimum ankylosing spondylitis (AS), undifferentiated spondyloarthropathy (UspA), reactive arthritis, Reiter's syndrome, SpA associated with psoriasis (PsA) or inflammatory bowel diseases (IBD) (1). Because of its complexity, there is no single or combination of features which have high sensitivity and specificity for diagnosis. For study of SpAamong international communities, investigators have relied on classification criteria.

A commonly used set of criteria is the European Spondyloarthropathy Study Group (ESSG) criteria published in 1991 (2). However, the ESSG criteria were developed in European countries, if used indiscriminately in a different population, there is no assurance that it would provide the same degree of sensitivity and specificity. Hence, investigators in several other ethnic groups have separately published results of evaluation of these criteria in their own localities (3-10). It is conceivable for example in certain communities, if the ESSG criteria are being used without prior verification, many patients who satisfy the criteria would carry a clinical diagnosis other than SpA.

The purpose of this study was to evaluate if the ESSG criteria can be used in China, a country which comprises one-fifth of the total world population.

Materials and methods

All patients were those seen by several rheumatologists in the third affiliated Hospital of the Sun Yat-Sen University, Guangzhou, China. A patient was given a clinical diagnosis of SpA as well as one of its subset based entirely on the judgment of the individual rheumatologist. Following recruitment by a rheumatologis, the patient was interviewed by one of two trainees who had no prior knowledge of the clinical diagnosis. During the days of recruitment, the recruiting rheumatologists would recruit all the SpA patients seen by them on those days. Each non-SpA patient seen immediately following each SpA patient was recruited as a control patient. A number of parameters listed in the ESSG criteria were evaluated (Table II). The definitions of these parameters were identical to those published by the ESSG (2).

Results

A total of 193 SpA and 166 control patients were recruited. Of the SpA, 35 patients were within the first year of onset. In the SpAgroup, there were 120 AS, 70 UspA and 3 with PsA associated with SpAbut not AS. There were no non-AS SpA patients who were diagnosed with reactive arthritis, Reiter's syndrome or IBD (Table I). The control patients consisted of those with rheumatoid arthritis (n =55), osteoarthritis (OA) (n = 38), systemic lupus erythematosus (SLE) (n = 27), gout (n = 12),

Table I. Number and percent of diagnostic subgroups in the SpAgroup and the control group.

Group	Number	Percent
SpApatients		
AS	120	62.18%
uSpA	70	36.27%
PsA	3	1.55%
Control patients		
RA	55	33.13%
OA	38	22.89%
SLE	27	16.26%
Gout	12	7.23%
Rheumatic fever	11	6.63%
Others	23	13.86%

Table II. Number and percent (in parentheses) of SpAand control subjects positive for parameters in the ESSG criteria.

Parameters	SpApatients AS	SpApatients Non-AS	SpApatients Total SpA	Control rheumatic diseases
Number of patients	120	73	193	166
Age, mean ± SD	32.3 ± 9.3	26.3 ± 10.0	30.1 ± 9.9	46 ± 16.7
Female gender	15 (12.5%)	22 (30.2%)	37 (19%)	126 (75.9%)
Number satisfying ESSG criteria	114 (95%)	51 (69.9%)	165 (85.4%)	6 (3.6%)
Inflammatory spinal pain	110 (91.7%)	43 (58.9%)	153 (79.3%)	12 (7.3%)
Synovitis	72 (60%)	37 (50.7%)	109 (56.5%)	39 (23.5%)
Positive family history	37 (30.8%)	13 (17.8%)	50 (25.9%)	1 (0.6%)
Psoriasis	7 (5.8%)	3 (4.1%)	10 (5.2%)	0 (0%)
Inflammatory bowel diseases	2 (1.7%)	1 (1.4%)	3 (1.6%)	0 (0%)
Alternating buttock pain	88 (73.3%)	50 (68.5%)	138 (71.5%)	7 (3.6%)
Enthesopathy	29 (24.1%)	21 (28.8%)	50 (25.9%)	12 (6.2%)
Preceded by acute diarrhea or urethritis	5 (4.2%)	4 (5.5%)	9 (4.7%)	2 (0.03%)

X-ray pelvis were done in 135 SpA(89 AS and 46 other SpA) and 22 control patients. Sacroiliitis was observed in 84 (73 and 11) and 0 patients respectively. Non-AS consisted of 70 USpAand 3 PsApatients.

rheumatic fever (n=11), traumatic arthritis (n = 7), intervertebral disc herniation (n = 7), systemic sclerosis (n = 3), inflammatory myopathies (n = 2), osteoporosis (n = 2), tuberculosis in sacroiliitic joint (n = 1), adult Still's disease (n = 1). The percent of patients positive for each of the ESSG parameters are listed in Table II.

Of the 193 patients clinically diagnosed as having SpA, 165 satisfied the ESSG criteria. The sensitivity of the ESSG criteria in these patients is 85.4% (100 x 165/193). Of the 166 control arthritis patients, 6 fulfilled the ESSG criteria, so that the specificity of the criteria is 96.4% (100x160/166) (Table III). There is no difference between the two genders when calculated separately. Of the 120 patients diagnosed as having AS, 114 fulfilled the ESSG criteria, which yield the sensitivity of 95%. Of the 73 other SpA patients, 51 satisfied the ESSG criteria, so that the sensitivity is 69.9%. There wre only 3 patients diagnosed as PsA associated with non-AS SpA. They all fulfilled the ESSG criteria. Among the 27 patients who were clinically diagnosed as SpA, but did not fulfill the criteria, the clinical diagnoses were undifferentiated SpA in 22 and AS in 5. In 17 of these 27 patients, the disease duration was less than one year. Four of the 5 cases of clinically diagnosed AS also satisfied the modified New York Criteria for AS (11). Among the control patients who were not diagnosed clinically as SpA, but who fulfilled the criteria, the diagnoses were rheumatic fever in 3, rheumatoid arthritis in 1, osteoarthritis in 1, and intervertebral disc herniation in 1.

Table III. List of sensitivity and specificity of ESSG criteria from various reports published in English language journals.

Geographical area	Year	Number of SpA patients	Number of control patients	% Sensitivity	% Specificity
European (2)	1991	403	674	87	87
Alaskan Eskimoes (4)	1993	104	75	88.5	89.3
Spain (5)	1995	218	1242	83.5	95.2
Turkey (7)	1997	157	124	86.6	91.2
Brazil (8)	1997	70	62	98.5	88.7
China	Present study	193	166	85.4	96.4

Only papers published in English language journals providing numbers of SpAand control patients are quoted here.
References are cited between parentheses.

The sensitivity and specificity of each parameter in our population are listed in Table IV.

Discussion

The ESSG and sometimes the Amor classification criteria for SpA (2,12) have become the gold standards to be used in all SpA studies worldwide. In almost all ethnicities and localities where the ESSG criteria have been evaluated, there is a high degree of sensitivity and specificity (2,4,5,7,8). Since these diseases are caused by multiple genetic and probably environmental factors, it still cannot be taken for granted that the ESSG criteria are universally applicable. The Chinese population comprises at least one-fifth of the world population. To interpret any SpA studies from this enormous ethnic group, it would be imperative to know whether the degree of sensitivity and specificity of ESSG criteria also fall within the ranges of other populations. The present evaluation was carried out in Guangzhou, which has a special advantage among cities in China. Being a highly industrialized cosmopolitan city with inhabitants emigrated from diverse areas of China, the patient population we have studied represented a reasonable cross-section of the popula-

Table IV. List of the sensitivity (sen.) and specificity (spe.) of individual parameters of the ESSG criteria in various studies.

Parameters	European (2)		Alaskan Eskimo (4)		Spanish (5)		Brazilian (8)		China (present study)	
	sen.	spe.	sen.	spe.	sen.	spe.	sen.	spe.	sen.	spe.
Synovitis	41.3	87.3	82.7	91.7	41.7	92.1	62.8	74.2	56.5	76.5
Positive family history	32.2	94.5	31	94.5	35.8	96.8	15.7	100	25.9	99.4
Psoriasis	22.7	95.2	8.7	95.9	33.5	98.9	11.4	100	5.2	100
Inflammatory bowel diseases	9.6	97.3	1	98.6	2.8	99.7	2.8	100	1.6	100
Alternating buttock pain	20.4	97.3	20	89	43.6	94.9	31.4	98.4	71.5	96.4
Enthesopathy	36.5	88.9	25	90.4	46.8	94	52.8	79	25.9	93.8
Preceded by acute diarrhea or urethritis	19.1	97	56	93	11	99	10	100	4.7	99.7

*References are cited between parentheses.

tion of China, and not inhabitants indigenous to a single locality. It is indeed a validation of the extreme usefulness of the ESSG criteria that our results show that the sensitivity and specificity of the ESSG criteria in our clinic population is similar to those already studied in other countries (Table III) (2, 4, 5, 8). The agreement of the Chinese patients with other populations extends also to individual parameters of the ESSG criteria, with no single parameter which is drastically unique among Chinese (Table IV). Not unexpectedly, there is a degree of variation of sensitivity and specificity among populations. This can be partly due to variations in the proportions of subsets of SpA patients or the proportion of subsets of control patients. Since we recruited all our SpA patients seen on the days of recruitment and each consecutively seen patient as control, our values reflected those of our clinic population.

Finally, we caution that studies such as ours here are designed to test the usefulness of the ESSG criteria as classification criteria. The results do not allow us to calculate their usefulness as diagnostic criteria. This is because the number of non-SpA patients we assessed was about the same as the SpApatients. However, in our clinic, the percent of SpA patients was only about 25%. As has been reported by E.M. Gomariz *et al.*, the usefulness of ESSG criteria for diagnosis will have to be evaluated by using the entire clinic population, and the accuracy will depend largely on the prevalence of SpA in a clinic population (13). In addition, as has been reported by the Spanish Spondyloarthropathy Study Group, even patients who are initially diagnosed as SpA and satisfying the ESSG criteria might evolve into other diagnoses after 5 years of followup (14).

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