

ORIGINAL ARTICLES

Clinical Characteristics of 42 SARS Patients and Their Treatment of Integrative Chinese and Western Medicine

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ABSTRACT **Objective:** To understand the clinical manifestation of severe acute respiratory syndrome (SARS) and explore its effective treatment with integrative Chinese and western medicine (ICWM). **Methods:** The data of patients, whose diagnosis of SARS had been confirmed were summarized and analyzed, and clinical observation was conducted when the patients were treated with ICWM. **Results:** In the early stage of the 42 patients, the symptoms revealed were fever in 100% of SARS patients, headache in 92.9%, aversion to cold in 76.2%, chest stuffiness in 76.2%, cough in 73.8% and myalgia in 88.1%; pulmonary lesion involves ≥ 3 lobes in 42.9%, 2 lobes in 47.6% and 1 lobe in 9.5%; 61.9% of them showed liver function abnormality (increase of ALT or AST), 47.6% showed elevated myocardial enzyme (CK or CK-MB), 0.48% showed an inclination of renal function (higher of BUN or Cr); in their T lymphocyte subsets, 91.2% (31/34 patients) had lowered CD₃ and 76.5% (26/34 patients) lowered CD₄/CD₈ ratio. In the mid-late stage, the symptoms were lassitude and weakness in 85.7%, scare in 81.0%, short of breath or chest stuffiness in 71.4%, loss of appetite in 64.3%; light dark tongue proper in 52.4%, yellow and white tongue coating in 45.2%, and yellow thick coating on the middle-root part of the tongue in 21.4%. Most of them were asymptomatic when discharged from hospital, with 92.8% of their pulmonary lesion, according to chest film, completely absorbed and liver function, myocardial enzyme and renal function all normalized. However, of the 30 patients who had CD₃ reexamination, 70% of the CD₃ showed lower than normal range and 36.7% showed their CD₄/CD₈ inclined to lower margin, follow-up should be done for these patients. Of the 42 patients, who received western medicine (WM) alone in the early stage and ICWM in the mid-late stage, 10 were severe cases and 3 critical cases, but none of them died. The mean defervescent time was 3.52 ± 0.85 days, the time for complete absorption of pulmonary lesion judged by chest X-ray film was 26.82 ± 5.98 days, and the mean hospitalization time was 33.60 ± 4.37 days. **Conclusion:** The manifestation of SARS is multifarious, showing that there were damage in multiple organs. The T lymphocyte count percentage and its subsets, CD₃ and CD₄/CD₈ ratio, are valuable for early diagnosis and follow-up in the rehabilitation stage. Majority of the patients could be clinically cured. Combined treatment of WM and TCM according to syndrome differentiation and psychiatric intervention are beneficial to remit partial symptoms and promote rehabilitation.

KEY WORDS severe acute respiratory syndrome, clinical characteristics, integrative Chinese and western medical treatment

The medical team of our hospital has been in charge of 42 SARS patients from Beijing Chest Hospital from April 28 to June 2, 2003, and the medical record data of the confirmed patients was summarized and analyzed, and the treatment of them with integrative Chinese and Western medicine (ICWM) approach for observation is now reported as follows.

METHODS

General Data

Clinical diagnosis conformed to "Clinical Diagnostic Standard (Trial) of Epidemic Severe Acute Respiratory Syndrome (SARS)" issued by the Ministry of Health.

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Among the 42 patients, male and female each 21 cases, ages 18 – 65 years, mean 34.80 ± 12.36 years; illness course 2 – 8 days, mean 3.67 days; of the ordinary type 29 cases, severe 10 cases, critical 3 cases; complicated with coronary heart disease and hypertension 2 cases, type 2 diabetes mellitus 1 case; lactation woman 1 case, 1 week after subtotal gastrectomy 1 case; with cigarette smoking history 12 cases; occurrence with family members aggregation 10 cases.

Symptoms and Signs during Admission

See Table 1.

Table 1. Symptoms and Signs of the 42 SARS Patients

Symptoms and signs	Case	Percentage (%)
Fever (T>38°C 24h)	42	100
Chill (aversion to cold)	32	76.2
Headache	39	92.9
Arthralgia	20	47.6
Myalgia	37	88.1
Sore throat	23	54.8
Cough	31	73.8
Expectoration	16	38.1
Hemoptysis	3	7.1
Chest stuffiness	32	76.2
Dyspnea	10	23.8
Sweating	11	26.2
Palpitation	12	28.6
Stomachache	1	2.4

Chest Film (orthophoria) Data at the Time of Admission and in Mid-late Stage

At the time of admission 108 lung lobes were involved among the 42 cases, with ≥ 3 lobes involved in 18 cases, 2 lobes in 20 cases, and 1 lobe in 4 cases. With lobar pneumonia in 40 cases, accompanied with interstitial pneumonia in 2 cases, heart shadow enlarged in 8 cases; in the mid-late stage the patients' chest films changed (illness course 6 – 20 days), and re-examination with X-ray showed that only 29 lobes had slight absorption, but the lesion progressed in 4 cases instead.

Laboratory Findings during Admission

See Table 2.

Table 2. Laboratory Findings of the 42 SARS Patients

Items	Norm	Incr	Decr	$\bar{x} \pm s$	Normal ref value
	(Case)				
WBC ($\times 10^9/L$)	28	12	2	9.78 ± 2.72	3.5 – 10
Lymphocyte (%)	17	1	24	21.36 ± 5.12	17 – 48
Neutrophil (%)	15	25	2	83.44 ± 6.07	43 – 76
Platelet ($\times 10^9/L$)	32	–	10	227.95 ± 63.80	150 – 390
Legio (Lp1-14, Lpm)	42	–	–	–	$\leq 1 \cdot 320$
MP (IgM, IgG deter)	42	–	–	–	negative
TB-Ab *	42	–	–	–	negative
R-air PaO ₂ (mmHg)	25	–	17	81.37 ± 20.50	>60
R-air PaCO ₂ (mmHg)	41	1	–	43.42 ± 7.80	<50
Breath R-air SO ₂	26	–	14	90.74 ± 18.23	>85%
ALT(U/L)	16	26	–	78.33 ± 5.75	0 – 40
AST(U/L)	28	14	–	47.52 ± 6.91	0 – 30
CK(U/L)	22	20	–	260.66 ± 17.83	0 – 195
BUN($\mu\text{mol/L}$)	41	1	–	2.49 ± 0.87	2.58 – 7.14
Cr($\mu\text{mol/L}$)	40	2	–	66.21 ± 7.34	40 – 110
CD ₃ (%) * *	3	–	31	50.36 ± 4.85	70.9 ± 5.5
CD ₄ /CD ₈ * *	8	–	26	1.22 ± 0.67	1.56 ± 0.12

Notes: * TB-Ab test includes TB 38KD protein antibody, TB external membrane antibody, TB specific mucopolypeptide antibody and BCG antibody; * * CD₃, CD₄/CD₈ were determined only for 34 cases; MP means mycoplasmic pneumonia

Tongue Picture of the SARS Patients in the Mid-late Stage and before Discharging

See Table 3.

Table 3. Tongue Picture of Mid-late Stage and before Discharging of SARS Patients

	MLSTP		BDTP	
	Case	%	Case	%
Tongue swollen with teenthprint	5	11.9	1	2.3
Tongue soft and floppy	2	4.8		
TP light red	16	38.1	38	90.5
TP light dark	22	52.4	3	7.1
TP light purple	4	9.5		
TP red with few coating	2	4.8	1	2.3
Thin white coating	12	28.6	32	76.2
Coating yellow white in mixture	19	45.2	7	16.7
CWMYT	9	21.4	2	4.8

Notes: MLSTP means mid-late stage tongue picture; BDTP means before discharge tongue picture; TP means tongue proper; CWMYT means coating white middle-root yellow and thick

SARS Patients' Symptoms and Signs in Mid-late Stage

See Table 4 for the results.

Table 4. Symptoms and Signs of Mid-late Stage SARS Patients

Symptoms and signs	Case	Percentage (%)
Fever	4	9.5
Lassitude and fatigue	36	85.7
Sweating	11	26.2
Dry mouth without desire for drinking	17	40.5
Sore throat	3	7.1
Oral ulcer	5	11.9
Cough	20	47.6
Body sputum	3	7.1
Short of breath or dyspnea	30	71.4
Chest oppression-pain	18	42.9
Palpitation	6	14.3
Insomnia	17	40.5
Scared feeling	34	81.0
Vexation	2	4.8
Anorexia	27	64.3
Nausea	19	45.2
Vomiting	5	11.9
Abdominal distension	22	52.4
Abdominal pain	4	9.5
Constipation	22	52.4
Diarrhea	13	31.0
Arthralgia	5	11.9
Frequent urination	7	16.7
Anal fissure	2	4.8
Hemorrhoid relapse	3	7.1
Skin rash	2	4.8
Menopause	6	14.3
Delayed menstruation	5	11.9

Therapeutic Methods

Western medicine used tetrad therapy as main treatment, i. e., the antiviral agents, corticosteroid (CS), antibiotics and immuno-modulator or supporting agents. We advocate that once the SARS diagnosis cannot be excluded, the CS should be used as early as possible. Based on the illness condition and individual difference, the dosage should be middle inclined to small (methylprednisolone, MPSTL, 1-4 mg/kg per day). Whenever it is improved and stabilized for 2-3 days, the dosage should be reduced. Non-invasive respirator has been used in 11 cases. Once complications appeared, corresponding symptomatic treatments were adopted.

Syndrome differentiation of TCM: Ac-

ording to clinical practice, the TCM holds that "Febrile epidemic disease emphasized on tongue picture, while miscellaneous disease stressed on pulse taken", during the round of ward, listen to the complaint, stress on the differentiation and tongue picture, using digital camera (SONY P8 type, made in Japan) to record the tongue picture of different time points, and the syndrome differentiation for treating program was worked out by 5 physicians in examination.

For febrile patients they should be treated with principle of clearing heat to detoxify and protecting cerebral cells. Xingnaojing (醒脑静) 40 ml + 5% glucose injection 500 ml for intravenous dripping, once daily for 7-10 days as one treatment course. If there was high fever, Maxing Shigan decoction (麻杏石甘汤) combined with supplemented Shengjiang powder (加味升降散) should be given, Angong Niu Huang bolus (安宫牛黄丸) was given if necessary. If the patient had low fever, complicated with dry mouth with thirsty or non-thirsty, lassitude, fatigue, spontaneous sweating, red tongue with few coating, rapid thready pulse, Yiqi Yangyin, clear residual heat principle should be used, modified Shengmai Yin (生脉饮) combined with Zhuye Shigao decoction (竹叶石膏汤) should be used; Pseudostarwort root 20 g, Lilyturf root 10 g, Magnolia vine fruit 10 g, fresh Gypsum 20 g, Pinellia tuber 10 g, Pilose Asiabell root 10g, Chinese Angelica root 10 g, Wolfberry bark 10 g, Sweet Wormwood 20 g, fresh Licorice root 10 g; if the tongue manifested as pale with thin white coating, then Buzhong Yiqi decoction (补中益气汤) supplemented with Red Peony root, Peony tree bark, Wild weed, Starwort root was added.

In order to prevent and treat pulmonary fibrosis, promote absorption, the principle of activating blood circulation to remove stasis, regulating qi flow to relief chest stuffiness should be adopted, ligustrazine 160 mg + 5% glucose injection 250 ml, intravenous dripping, once daily, 21 days as one treat-

ment course. Clear Fei to remove phlegm, the Houttynia injection 100 ml was intravenously dripped, twice daily, 7-14 days as one treatment course.

If digestive symptoms (adverse reaction after using anti-viral agents and antibiotics frequently encountered), such as anorexia, stomachache and bloating, accompanied with nausea, vomiting, abdominal distension or abdominal pain, or constipation, light red tongue proper, with thin white or yellow-white coating, or yellow thick greasy coating on the root of tongue, taut and thready pulse, the soothe Gan qi flow, invigorate Pi and harmonize Wei, and modified Sini powder (四逆散) combined with Pingwei powder (平胃散) would be used; Thorowax root 10 g, Immature bitter orange 10 g, red and white Peony root each 10 g, Atractylodes and Bighead Atractylodes tuber each 10 g, Tangerine peel 10 g, Magnolia bark 10 g, Pinellia tuber 10 g, Medicated leaven 10 g, Cuttlefish 15 g, wine prepared Rhubarb 10 g. If the symptoms manifested as loose stool to be the chief symptom, the defecation 3-5 episodes per day, lassitude of limbs, white and greasy coating with middle and root tongue portion yellow in color (seen in the disturbance of flora after long-term and large dosage of antibiotics application), they should be treated with invigorating Pi and harmonizing Wei to regulate qi and remove dampness, Shenling Baizhu powder (参苓白术散) combined with Gegen Qinlian decoction (葛根芩连汤) adopted.

To the symptoms manifested as chest pain with stuffiness, dry cough, short of breath or asthma with suffocation feeling, tongue proper inclined to be dark in color (seen after lung injury, the pulmonary lesion absorption slowly, pulmonary function impairment, low oxygenemia, enlarged heart shadow in chest film, and the adverse reaction after long-term and large dosage application of ribavirin), it should be treated with soothing chest qi, activating blood circulation to remove stasis, ventilating Fei to

ease asthma, those with chest pain as the chief symptoms should use supplemented Xuefu Zhuyu decoction (血府逐瘀汤); short of breath, asthma and suffocation feeling as chief symptoms should use Xiao Qinglong decoction (小青龙汤) combined with Shen'ge powder (参蛤散); Liuwei Dihuang pill (六味地黄丸) should be administered to reinforce Fei, Pi and Shen.

To the symptoms manifested as palpitation, insomnia, scared feeling, vexation, red tongue tip (they were frequently encountered in early and middle stage, psychiatric stressed reaction and part of the patients owing to the lung tissue consolidation to cause systemic hypoxia, increase the heart load, even appear cardiac hypofunction, enlarged heart shadow was seen in chest film, and SARS virus caused myocardial damage, CK and CK-MB obviously elevated was seen in laboratory findings), they should be treated with soothing and relieving Gan qi stagnation, calming down Xin and spirit, ventilate Fei to remove phlegm, the supplemented Xiaoyao powder (加味逍遥散) combined with Maxing Shigan decoction, take Angong Niu Huang bolus if necessary. And TCM psychologic treatment was launched at the same time, to display the concerning and encouragement, to help the patients establish confidence, relieve the patients' tension and scared feeling.

To the symptoms manifested as dull pain in hypogastric region with distension, belching and acid regurgitation, easy to lose temper, red tongue margin as the chief manifestation or abnormal liver function test, ALT, AST elevation, they should be treated as soften Gan to relieve spasm, the supplemented Yiguanjian (一贯煎) should be used to generate blood and nourish Gan, relieve spasm and arrest pain, using Rehmannia root 15 g, Ladybell root 15 g, Chinese Angelica root 10 g, Wolfberry fruit 10 g, Lilyturf root 10 g, Magnolia vine fruit 10 g, White Peony root 20 g, Sichuan Chinaberry 5 g, Cuttlefish 10 g, at the same time, Wuji

Baifeng bolus (乌鸡白凤丸), each time 2 bolus, 2-3 times daily was given.

RESULTS

Standard of Efficacy

According to "Ministry of Health on discharging standard of SARS patients": (1) Normal temperature for more than 7 days; (2) Respiratory symptoms obviously improved; (3) X-ray film shows marked absorption. Forty-two patients was discharged from the hospital before May 30, mean hospitalization was 33.60 ± 4.37 days, non of them died of SARS.

X-ray Chest Film

X-ray chest film of the lesion absorption till May 29 showed that during admission the 101 among 108 pulmonary lobes involved were normalized, obvious absorption was seen in other 7 lobes, 3 pulmonary lobes displayed local sparse network-like sign, 1 lobe as thin rope shadow, pulmonary striae of 3 lobes thickened. The mean time of complete absorption chest film was 26.82 ± 5.98 days.

The Symptom Relief

(1) Early fever: The mean defervescent time was 3.52 ± 0.85 days. (2) Digestive symptoms were markedly abated within 1-3 days, within 1 week they disappeared. (3) Within 2-3 days, the psycho-neurotic symptoms, vexation and restlessness disappeared.

Laboratory Findings

Blood routine were re-examined before discharging, only 2 of them showed lymphocyte differential count percentage slightly lowered, AST and ALT of 4 patients slightly elevated ($60-78$ U/L), 30 rechecked patients showed lymphocyte subset, among them 21 of 30 cases whose CD_3 count was lower than normal, 9 within the normal range, mean 54.58 ± 5.01 %; CD_4/CD_8 of 11 cases had a trends of lowering, while 19 cases within normal range, mean 1.33 ± 0.20 . In myocardial enzyme spectrum, all of the CK and CK-MB normalized.

CS Application

All the patients using MPSL and according to withdraw and reduce dosage program, syndrome differentiation for treatment with TCM herbs was used to conduct the withdrawing and reducing procedure, no relapse or aggravation was observed. During discharging, 9 patients brought MPSL with them, 10-20 mg orally taken, adverse reactions such as moon face, buffalo hunchback, potbelly or gastric ulceration with bleeding were not seen.

DISCUSSION

Although SARS belongs to infectious disease, it comes violently with swift change with a certain degree of mortality, but if the strict measures were being implemented, SARS can be treated and prevented. Facing abrupt encountered violent infectious disease which is utterly strange to mankind, scared feeling existed univesally in whole mankind, as a patient, if the deep-rooted scared feeling was not eliminated as soon as possible, it would be sure to affect the normal qi flow of visceral organ, which would express as Gan stagnation with Pi deficiency, Gan-Wei disharmony, Xin spirit uneasiness, and other syndromes.

We used digital camera to record the tongue picture of patients. In middle-late stage patients, the tongue picture of heat injured qi-yin that showed red tongue with few coating was not frequently encountered, neither did the whole tongue with yellow greazy coating which displayed as serious dampness and heat, the tongue picture displayed as critical when the tongue proper revealed swollen and enlarged in size, with teethprint at the margin, dark in color, the coating at the root of tongue is yellow thick is typical syndrome of qi deficiency blood stasis, phlegm-damp accumulate in the body, and the function of qi stagnates. In tongue picture of other patients, if there was no evident deficiency, stasis and dampness, which was belong to the category of TCM febrile epidemic diseases. The pathogenesis of late stage of SARS belongs to the evil existing

and vital energy deficiency, the residual heat was not cleared, qi-yin insufficiency, qi deficiency with blood stasis, qi function stagnates, Pi deficiency to generate dampness, Xin spirit not calmed down, and others. Before and after discharging, no Shen deficiency syndrome in TCM was observed.

Glucocorticoid is the key drug in treating SARS, which should be used for the confirmed patients in clinical practice as early as possible, to block the hypersensitive response and reduce the damage, alleviate toxic symptoms for improving the prognosis, the dosage should be individualized to adjust in time. We used 4 grades of MPSL 80, 160, 240, 320 mg, diluted with normal saline 100 ml, every day intravenous dripping for once or twice, middle and small dosage of CS can control the disease. According to the situation of remission or chest film absorption the dosage should be gradually withdrawn, 40–80 mg in 3–4 days, but when the dosage was high (4–8 mg/kg body weight), then the reduction could be decreased for half dosage.

About using orally taken CS to replace intravenous dripping, we observed 2 patients, who after intravenous dripping MPSL for 240 mg, twice a day, reduced to

160 mg MPSL, once daily, 3 days later stopped the medication without CS orally taken, but the condition kept stable. When MPSL used, H₂ ceptor inhibitor or proton pump inhibitor and antibiotics (intravenous dripped or orally taken, often used were macrolides or Quinolones) should be used to prevent the peptic ulcer bleeding, infection or immuno-suppression induced secondary infection. If flora imbalance appears, temporarily cease the medication or change to other kinds of antibiotics could adjust the flora imbalance.

On the whole, at present people's understanding deepens day after day, to summarize the experience of clinical practice, using ICWM to combine the superiority of both medicines and enrich the therapeutic measures, aiming at different stage with different situation to control the disease, remit the symptoms, raise the quality of life and promote the rehabilitation. Owing to the limitation of time and conditions, it is unable to evaluate the clinical efficacy of SARS with evidence based medicine and using the prospective randomized controlled assay which awaits further analysis, comparison and exploration.

(Received June 4, 2003)

NEWS

Audio-Vision Symposium on Preventing and Treating SARS by Integrative Medicine between Taiwan and the Mainland Held in Beijing and Taipei

In order to jointly fighting SARS so as to promote the academic exchange between both sides of Taiwan Straits, a SARS Prevention and Treatment with Integrative Chinese and Western Medicine (ICWM) Televised Informative Symposium between both sides of Taiwan Straits was convened in Beijing on June 9, 2003, which was sponsored by Chinese Association of Integration of Traditional and Western Medicine (CAIM) and Taiwan Association of Integrative Chinese and Western Medicine (TAICWM) at the site of Beijing and Taipei simultaneously. The symposium was co-chaired by Prof. Ying-shiung Lee, President of Taiwan Chang Gung University Medical College and Prof. Wei Beihai, Vice President of CAIM. Prof. Chen Keji, Academician of Chinese Academy of Sciences, President of CAIM. Prof. Sze Piao Yang, Honorary President of TAICWM, former President of Taiwan University Medical College, Prof. Minghe Huang, President and Director—General of Taiwan counterpart addressed the meeting. The symposium invited part of specialists from both sides of Taiwan Straits who participated the fight against SARS to deliver speeches on the experiences about using ICWM in treating SARS, the appropriate opportunity of TCM in intervening the treatment, the TCM in preventing pulmonary fibrosis and how to prevent iatrogenic infection, particularly the infection of medical professionals. The participants expressed their views freely and each has his own say, the discussion was warmly, friendly and lively.