Traditional Chinese Medicine in Pediatric Oncology: A Systematic Review of Clinical Studies Published in the Chinese Literature

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Introduction

- Complementary and alternative medicine(CAM) is gaining popularity within pediatric oncology worldwide
- As a part of CAM, Traditional Chinese Medicine(TCM) is commonly used as a supportive treatment among the Chinese population, with a unique TCM theoretical system and empirical treatment methods
- However, few or no studies have focused on clinical studies of TCM use in childhood cancer that were published in Chinese literature databases

Objective

- To summarize existing Chinese literature on controlled clinical studies of TCM use in pediatric oncology through a systematic literature search
- To identify common associations among ingredients in the included studies through association rules mining

Methods

- A systematic search was conducted in six major Chinese electronic databases and methodological quality of included studies was assessed using the Jadad (Oxford) scale ^[1]

Figure 1: Result of literature review

Studies identified before December 2018 (n=8889)

Included studies (n=43)

- were published in Chinese
- were full texts, conference proceedings or thesis dissertations
- focused on survivors of childhood cancer who were diagnosed with cancer before 19 years old
- involved at least one group involving TCM treatment for all types of malignant tumors and malignant hematologic diseases
- were designed as randomized controlled trials (RCT), non-randomized controlled trials (nRCT) or prospective/retrospective observational clinical studies

Excluded studies (n=8845)

- were reviews, meta-analysis papers or commentaries
- contained only in vivo or in vitro experimental data without human data
- were small-sample-sized studies comprising less than 5 cases
- provided only the names of formulae but without detailed descriptions of herbal ingredients
- were duplicates reporting the same group of participants

Results and Discussion

Table 1: Summary of Included Studies (n=43)

Component	Category	Format	No. of studies	Frequency
Study Design	Controlled Trials	RCT	23	54%
		nRCT	4	9%
	Observational Studies	--	16	37%
Quality	Jadad Score (0-8)	Modest (3-5)	25	58%
		Poor (0-2)	18	42%
Cancer Type	Leukemia	--	26	61%
	Neuroblastoma	--	5	12%
	Mixed/Others	--	12	28%

References

1. Olivo SA et al. Phys Ther 2008;88:156-175
2. Auricular Acupuncture Point. WFAS STANDARD-002: 2012
3. WHO Standard Acupuncture Point Locations in the Western Pacific Region. 2008

Table 2: TCM Treatment and Outcomes of Included Studies (n=43)

Component	Category	Format	No. of studies	Frequency
TCM Interventions	Herbal medicine		39	91%
	Oral medication		31	72%
		Decoction	27	63%
		Proprietary	8	19%
		Not reported	3	7%
	For external use	Topical	6	14%
		Bathing	5	12%
	Injection		3	7%
	Acupoint stimulation		10	23%
		Acupressure	9	21%
		Auricular acupressure	2	5%
		Moxibustion	4	9%
Others	Dietary therapy	9	21%	
	Holistic intervention	7	16%	
Study Outcomes	Chemotherapy-induced adverse effects	--	33	77%
		Myelosuppression	25	58%
		GI discomfort	20	47%
		Nausea & vomiting	19	44%
		Fatigue	13	30%
		Pain	10	23%
		Sleep	5	12%
		Others	21	49%
	Response, survival, relapse rate	--	17	40%
	Infection rate	--	12	28%
	Quality of life	--	9	21%
	Others	--	11	26%

Table 3: Characteristics of the 147 Herbs from 50 Formulae

Component	Category	No. of herbs occurrences	Occurrence frequency	No. of formulae use	Frequency of use
Flavor	Sweet	412	62%	50	100%
	Bitter	244	37%	48	96%
	Acrid	153	23%	46	92%
	Salty	35	5%	20	40%
Nature	Warm	299	45%	48	96%
	Cold	175	26%	40	80%
	Neutral	162	24%	47	94%
Channel Tropicism	Spleen	345	52%	50	100%
	Lung	267	40%	49	98%
	Stomach	247	37%	42	84%
	Liver	241	36%	46	92%
	Kidney	239	36%	46	92%

Table 4: Acupoints Identified in Included Studies (n=7) [2,3]

Acupoints (Code)	Meridian	Location	Occurrence	Frequency
Zusanli (ST-36)	Stomach	Anterior leg	4	57%
Pishu (BL-20)	Bladder	Upper back	4	57%
Weishu (BL-21)	Bladder	Upper back	4	57%
Zhongwan (CV-12)	Conception Vessel	Upper abdomen	3	43%
Neiguan (PC-6)	Pericardium	Anterior forearm	2	29%
Shenmen (TF4)	--	Ear point in triangular fossa #	2	29%
Wei (CO4)	--	Ear point in concha #	2	29%
Xiawan (CV-10)	Conception Vessel	Upper abdomen	1	14%

Conclusion

- Preliminary evidence seems to support TCM as supportive therapy to alleviate treatment-related symptoms and improve health status in children with cancer
- Reporting of clinical studies could be improved to synthesize more quality evidence and guide the use of TCM in pediatric oncology
- Based on the categorized ingredients, association rules mining would be applied as future development to identify compatibility pattern