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Meta-analysis of Qiu's Acupuncture Point as a Complementary Therapy for Acute Ureteric Colic Caused by Calculus

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Abstract: *Dr. Yunqiao Qiu from Guangzhou University of TCM has discovered a certain point located near costalspinal angle, which can relieve acute ureteric colic effectively and named it as "Qiu's point". This paper conducted a meta-analysis of the clinical efficacy of Qiu's acupuncture point in the treatment of acute ureteric colic caused by ureteral calculus, in order to comprehensively analyze the role of Qiu's acupuncture point in the relieve of acute ureteric colic. All randomized controlled trials (RCTs) from relevant articles in Chinese and English by October 31, 2019 have been selected, excluding cohort studies and case reports. Statistical analyses are performed using the Review Manager V.5.3 and R packages Metafor. We use the Cochrane risk of bias tool for randomized trials to assess the risk of bias of included studies. Meta-analysis results demonstrated that Qiu's acupuncture point have some positive effects for acute ureteric colic caused by ureteral calculus.*

Keywords: *Qiu's Acupuncture point, Meta-analysis, acute ureteric colic caused by ureteral calculus*

1. Introduction

Acute renal colic caused by calculus is a common disease in emergency department [1]. In China, the incidence of ureteric colic is 1%-5%, while it is more than 10% in Guangdong and Guangxi provinces. Urinary calculi has become one of the heaviest burden on the public medical system[2]. Emergency physicians mostly use tramadol, pethidine or fentanyl to relieve acute ureteric colic. However, the cost is expensive and the side effects are serious. Some might cause drug-induced liver damage and the pain relief effect of some patients is not obvious. It is known that acupuncture is a traditional therapy widely use in China. By stimulating acupoints in meridian, flow of energy through the body will be aroused. Dr. Yunqiao Qiu from Guangzhou University of TCM has discovered a certain point located near costalspinal angle ,which can relieve acute ureteric colic effectively and named it as "Qiu's point". Due to its remarkable effect, many hospitals began to use Qiu's point to treat acute renal colic.

Table 1 Characteristics and main outcomes of included studies[3-7].

		Total patients(N)		Outcome (%)	
	Study design	Experimental	Control	Experimental	Control
Wang2018[3]	Retrospective	116	120	90.83	50.86
Chen[4]	Prospective controlled	20	20	90.00	60.40
Song[5]	Prospective controlled	30	30	86.20	70.41
Lee[6]	Prospective controlled	25	25	92.00	68.00
Hong[7]	Prospective controlled	30	30	97.10	82.90

2. Data and methods

2.1 Criteria for data selection

(1) Research type: domestic randomized controlled trial (RCT) and retrospective case-control study (R) in Chinese or English.

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(2) Research target: Patients with acute renal colic caused by calculi diagnosed in emergency department; Documentation was complete and the original data were provided, and cases treated by two treatment methods were excluded; When the same research was repeatedly published, the one with the highest data volume was selected; Both Chinese and English documentation was selected.

(3) Intervention measures: The data selected in the study were divided into Qiu's acupoint group and conventional medicine group.

(4) Outcome indicators: Pain relief.

2.2 Criteria for data exclusion

(1) The purpose of the study was not to compare the treatment of acute renal colic between Qiu's point and the conventional medicine group;

(2) Case report, review and meta-analysis;

(3) The reported data are incomplete or lack of original data, no charts or relevant data in the article that are completely consistent with other documentation, and the relevant original data cannot be obtained by contacting the author;

(4) Republished documentation should also be excluded.

2.3 Data indexing strategy

Data from China National Knowledge Infrastructure (CNKI), Wanfang data, China Science and Technology Journal Database (CQVIP), PubMed and the Cochrane Library, search keywords in Chinese are "Qiu's point" or "acupuncture point", "acute renal colic" or "calculus", Mesh search keywords in English are "renal colic" and "acupoint". Full text documentation that cannot be obtained from electronic databases are retrieved from journal database in Guangzhou University of Chinese Medicine library [8].

2.4 Data extraction

Documentation screening was completed by two researchers referring to the data selection criteria, cross-checked was implemented after data extraction. Disagreement was resolved through the intervention of a third party. The screened documents were imported into Endnote while the irrelevant documents were excluded. Data extraction included basic demographic data, visual analogue scoring (VAS)[9], analgesic efficiency, etc. Basic information includes research ID, author, publication time, sample size, intervention measures, control measures, treatment course, etc.; information of the patients, including age and gender; RCTs bias risk assessment, including random sequence generation method, allocation concealment, blinding method, incomplete outcome report; Outcome indicators were extracted by visual analogue scale (VAS) and analgesic efficiency; Safety outcomes: adverse events.

2.5 Risk assessment of bias in included studies

The risk of bias assessment is a method of assessing the risk of bias in randomized controlled trials according to the Cochrane Collaboration System Evaluator Manual[10], including random sequence generation, allocation hiding, blinding of subjects and researchers, blinding of outcome evaluators, incomplete outcome report, selective outcome report and other biases. For each item of the risk deviation assessment, if the conditions are met, the risk is low; if the conditions are not met, the risk is high; when the relevant content is not reported in the paper, it will be selected as unclear, which means that the risk of bias is unknown[11].

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high; when the relevant content is not reported in the literature, it will be selected as unclear, which means that the risk of bias is unknown.

2.7 Statistical processing

The RevMan 5.3 software provided by the Cochrane Collaboration was used to carry out the bias risk analysis of each trial, the meta-analysis of the total effective rate, and the publication of the bias analysis. Binary variables use odds ratio (odds ratio, OR) as statistics, while continuous variables use mean difference (MD) as statistic, and 95% confidence interval (CI) is given. The heterogeneity of the included studies was analyzed by the Q test, and the statistical heterogeneity among the included studies was evaluated in combination with I2 statistics [12].

If I2 >50%, a high degree of heterogeneity was accepted, If I2 < 50% while random effect model was adopted when significant heterogeneity was detected [13]. Moreover, the quality of evidence was assessed according to the GRADE system and divided into four categories: high, moderate, low and very low.

3. Results

3.1 Methodological quality evaluation

We initially identified 29 relevant articles, 19 were excluded due to duplicates. Following the data selection criteria, a total of 10 were excluded. As a result, 5 articles met eligibility criteria for systematic review and meta-analysis. All trials were conducted in mainland China and published in Chinese journals. The process of article selection is shown in Figure 1. The selected data are shown in Table 1. All were RCTs. The trials were all conducted in China; A total of 426 patients were involved in this study, 264 males (61.97%) and 162 females (38.03%). The age of patients ranges from 18 to 65.

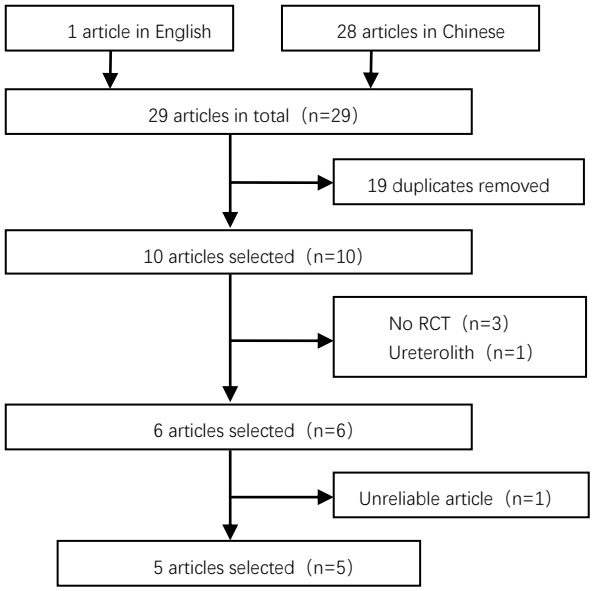

Figure. 1 Flowchart of the trial selection process.

3.2 Risk of bias in the selected data

Assessment of risk of bias for each selected RCT is summarized in Figs. 2 and 3. All the included data had a high or unclear risk of bias in almost every domain. For the domain of random sequence generation. Compliance is generally high in emergency patients, especially those with pain, and no shedding has been reported in any of the studies. The bias risk assessment for the selected data is shown in Figure 2.

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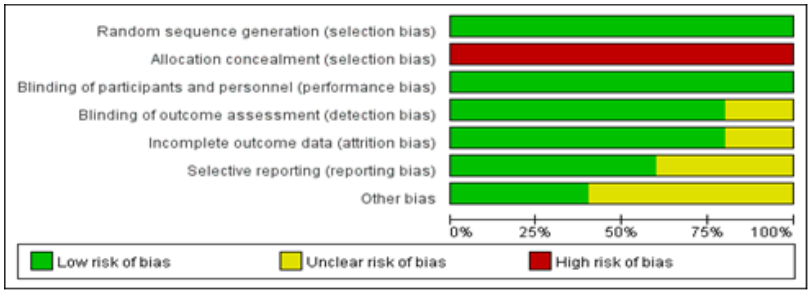

Figure. 2 Risk assessment of bias A

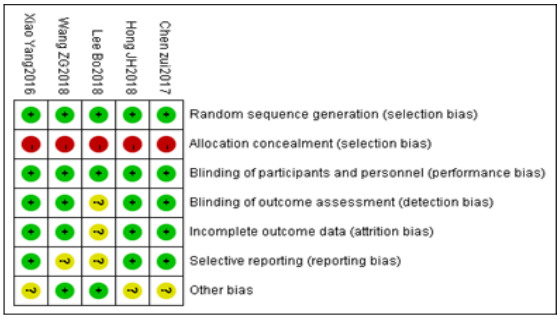

Figure. 3 Risk assessment of bias B

3.3 Visual Analogue Scale(VAS)

We use VAS[8] to assess the patient's degree of renal colic. Grade 0 means no pain, grade 10 stands for severe pain, while the middle part shows different degrees of pain. This method has been very maturely used in the evaluation of renal colic and tumor patients. The heterogeneity test results of the 5 selected studies were I2>50%, so the random effects model was adopted. There was a statistically significant difference between the two groups in the treatment of acute renal colic (95% CI 0.88 ~ 3.83, P < 0.00001), suggesting that Qiu's point is better than western medicine for the analgesic effect of acute renal colic, as shown in Figure.4.

3.4 Probability of effective pain relief

Four research reports found that both Qiu's points and western medicine treatment can effectively relieve acute renal colic. The results of the fixed-effect model meta-analysis showed that the comparison of the effective rate of clinical pain relief between the Qiu's point group and the western medicine treatment group suggested that Qiu's point is better in curative effect (OR=0.22, 95% CI 0.10, 0.48 ~ I2=38% , P=0.0002<0.05, Figure 5).

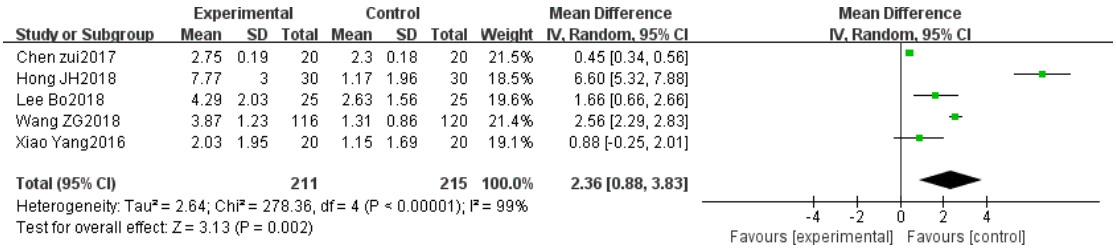

Figure. 4 Visual Analogue Scale/Score

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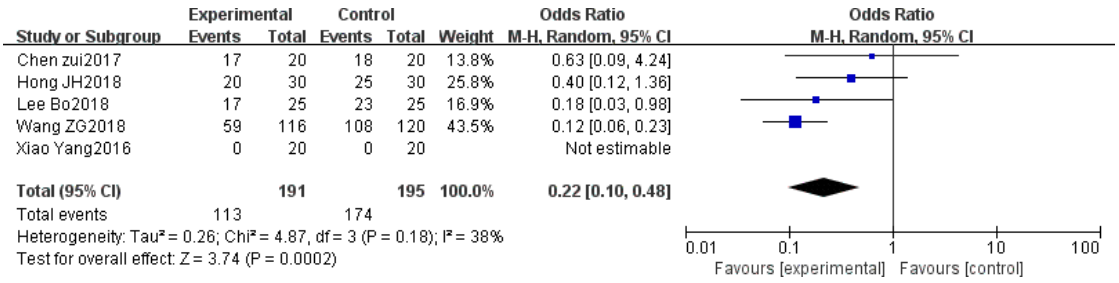

Figure. 5 The clinical effective on alleviating pain

3.5 Adverse events

The five research reports did not mention the occurrence of adverse reactions at Qiu's point. The western medicine group mentioned that some patients had nausea and vomiting after medication, but they did not elaborate.

4. Discussion

4.1 Significance of the research

Acute renal colic is a common disease in the emergency department, especially in the southern area of China while in summer. It is estimated that approximately 30% of emergency surgical visits are due to acute renal colic. At present, the main treatment means of western medicine is prescribing analgesia and spasmolysis to patients. Although the analgesic is very effective, some drugs have the disadvantages of multiple adverse reactions or addictiveness, and are cost more. Commonly some drugs, like fentanyl, may cause respiratory depression and even death in patients because of the opioid intolerance [14]. Qiu's point has the advantages of simple operation, quick onset and no side effects. The purpose of this paper is to evaluate the analgesic effect and effective rate of Qiu’s point on acute renal colic.

4.2 Main findings of the research

The results of the study suggest that the visual analogue scale (VAS) of patients in the Qiu's acupoint group after the treatment was significantly lower than those in the group who took western medicine (95% CI 0.88 ~ 3.83, P < 0.00002). The clinical analgesic effective rate (95%CI 0.10~0.48, P=0.00002) was significantly better than that western medicine groups. None of the 5 research documents reported any adverse events at Qiu's point [15].

4.3 Limitations of the study

There are three main limitations. (1) All data were selected from Chinese articles. No overseas study on Qiu’s acupoint has been found because it is a relatively new treatment. Without comparative data, the outcome might have risk of bias. (2) Patients' basic personal information were not mentioned in the included literature, so individual differences could not be understood. At the same time, many patients in the emergency department were not evaluated by more detailed technical examinations. The severity of the diseases selected in the study may result in great clinical heterogeneity, and the commonly used VAS score also had great individual subjectivity. (3) The selected data were difficult to achieve with a randomized hidden design. Some articles did not specifically describe the random methods. As acute renal colic was mostly treated in the emergency department, the articles did not mention the conditions before onset and follow-up after pain relief, which led to the low methodological quality [16].

4.4 Hints for future study

The data in the study has not been undergone large-scale clinical trial, the method quality is generally poor. More high-quality clinical trials, random sequence and random hidden plan formulation should be carried out, strictly implemented blinding. Furthermore, to improve the quality control in the process of test, to register research plan in advance, and to regulate the implementation process, can

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lead to more reliable research conclusion. More tests should be used to evaluate the effect of renal function and recurrence after analgesia in patients with acute renal colic[17].

5. Conclusion

For acute renal colic, compared with western medicine treatment, Qiu's point has more advantages in analgesic effect and analgesic efficiency. It has no medical restrictions, lower cost, and no serious adverse reactions. It can be used in clinical applications. However, due to the small number of articles and fewer reference indicators, more controlled trials are still needed for further research.

References

[1] NAZIM ALI AHMAD, MOHAMMAD HAMMAD ATHER, JEFFREY REES. Unenhanced helical computed tomography in evaluation of acute flank pain[J]. International Journal of Urology, 2003, 10(6).

[2] Wang et al. The progress of PCNL in the treatment of upper urinary calculi [J]. Journal of Hebei Union University (Medical Edition), 2014,16(01):42-44.

[3] Wang Zhigang, Qiu Yunqiao, Analysis of the superiority of Qiu's point in the treatment of acute renal colic, Journal of Chengdu University of Traditional Chinese Medicine 40 (2018) p.45–48.

[4] Chen Zui, Mechanism of Qiu's point in the treatment of renal colic[D]. Guangzhou University of traditional Chinese Medicine,2017.

[5] Song Taichao, Clinical analgesic study on the treatment of calculous renal colic by acupuncturing Qiu's point [D]. Guangzhou University of traditional Chinese Medicine,2016.

[6] Lee Bo, HU Yan, Application of Zhengqing Fengtongning via electroporation to Shenshu and Qiu acupoint in the treatment of renal colic, China Modern Medicine 25(2018)p.171-178.

[7] Hong Jiahui, Study on the mechanism of Qiushi acupoint in the treatment of renal colic based on substance P of painful neuropeptide [D]. Guangzhou University of traditional Chinese Medicine,2018.

[8] Bonica JJ, et al. The management of pain 2nd ed. Philadephia: Lea and Febiger, 1990.581.

[9] Chen Shanwen,Zhao Mei,Qiu Jianxin, Acupuncture for the treatment of sudden sensorineural hearing loss: A systematic review and meta-analysis: Acupuncture for SSNHL.[J] .Complement Ther Med, 2019, no.42, p. 381-388.

[10] J. Higgins, D. Altman, J. Sterne, Chapter 8: assessing risk of bias in included studies. Cochrane Handbook for systematic reviews of interventions version 5.1. 0 [updated march 2011], Cochrane Handbook System Rev Interv Vers 5 (2011) p.187–241.

[11] Hu Hantong, Chen Lifang, Ma Ruijie et al. Acupuncture for primary trigeminal neuralgia: A systematic review and PRISMA-compliant meta-analysis[J]. Complement Ther Clin Pract, 2019, No.34, p.254-267.

[12] Higgins JP, Thompson SG, Deeks JJ, Altman DG. Measuring inconsistency in meta- analyses. BMJ 2003, p. 327-557.

[13] Midgette AS, Wong JB, Beshansky JR, Porath A, Fleming C, Pauker SG. Cost-effectiveness of streptokinase for acute myocardial infarction: A combined meta-analysis and decision analysis of the effects of infarct location and of likelihood of infarction. MED DECIS MAKING 1994, p. 14-108.

[14] Jerome Marley. Campbell-Walsh Urology, 9th Edition (E-dition) - Edited by AJ Wein, LR Kavoussi, AC Novick, AW Partin and CA Peters[J]. International Journal of Urological Nursing, 2007, 1(2).

[15] Liu et al. Therapeutic effect of drugs on renal colic[J]. Journal of Clinical Medical,2008, no.2 p. 95-96.

[16] Zhang et al. Study on Acupuncture Points For Acupuncture Treatment Of Renal Calculus Based On Literature [J]. Chinese Journal of Ethnomedicine and Ethnopharmacy.2018, no.5, p.143- 144.

[17] ZHANG Mingqiang, WANG Dingguo, GUO Taipin. Study On Acupuncture Points For Acupuncture Treatment Of Renal Calculus Based On Literature[J]. Chinese Journal of Ethnomedicine and Ethnopharmacy, 2019, vol.28, no.08, p.1-5.