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Chemotherapy or Radiotherapy-induced Leukopenia

Leucopénie induite par chimiothérapie ou radiothérapie

Articles connexes: - évaluation de la pharmacopée chinoise - conduites thérapeutiques - pathologie - acupuncture expérimentale - qigong -

1. Systematic Reviews and Meta-Analysis

1.1. Generic Acupuncture

1.1.1. Deng 2024

Deng Y, Zhang H, Wei T, He G, Zhu Z, Zhang S, Liu M, Xue J, Zhang W, Yang X. Efficacy and safety of acupuncture therapy for leukopenia after chemotherapy or radiotherapy: A systematic review and meta-analysis. Eur J Integr Med. 2024 Jun;68:102373. https://doi.org/10.1016/j.eujim.2024.102355

Introduction	Acupuncture-Moxibustion Therapy (AMT) has been used to treat leukopenia associated with cancer treatment. This systematic review and meta-analysis aimed to assess the clinical efficacy, safety, and degree of evidence of AMT in the treatment of post-chemoradiotherapy leukopenia.
Methods	Four English databases (The Cochrane Library, PubMed, EMBASE, Web of Science) and four Chinese databases (Chinese Biomedical Database (CBM), China National Knowledge Infrastructure (CNKI), Chinese Scientific Journal Database (VIP), and WanFang Database) were searched from inception to February 6, 2023 for randomized controlled trials (RCTs) regarding post-chemoradiotherapy leukopenia with AMT. Two authors extracted data and assessed the quality of trials through the Cochrane risk of bias tool 2.0 independently. All meta-analysis was performed using Review Manager 5.4.1 and GRADE was usually used to measure the certainty of evidence.
Results	The analysis included **18 RCTs with 1,377 patients**. The results showed that in treating post-chemoradiotherapy leukopenia, AMT is more effective compared to Chinese herbal medicine (CHM) (e.g., the effective rate: risk ratio (RR)=1.33, 95 % confidence interval (CI) 1.16 to 1.53, 3 RCTs, 349 cases; the white blood cell count (WBC): standardized mean difference (SMD)=1.03, 95 %CI 0.04 to 2.01, 2 RCTs, 148 cases), experimental synthetic drugs (ESDs) (e.g., the effective rate: RR=1.35, 95 %CI 1.13 to 1.61, 3 RCTs, 184 cases; the WBC: SMD=1.43, 95 %CI 1.21 to 1.65, 3 RCTs, 244 cases). AMT in combination with myeloid growth factors (MGFs) significantly improved the effective rate (RR=1.21, 95 %CI 1.09 to 1.35, 3 RCTs, 187 cases) and WBC (SMD=1.86, 95 %CI 1.56 to 2.17, 2 RCTs, 117 cases) compared to MGFs. However, there are no data to support the benefits of AMT or in combination with drugs in terms of Karnofsky performance status scores. The certainty of the overall evidence is very low due to the small sample sizes and poor quality of the included RCTs.

Conclusions	Very low certainty evidence suggests that AMT may be an effective complementary therapy for post-chemoradiotherapy leukopenia. The present evidence does not support a definitive safety profile for AMT. However, the quality of the current studies are low, and these conclusions need to be further validated by conducting more high quality RCTs.

1.1.2. Shih 2023

Shih YW, Wang MH, Monsen KA, Chang CW, Rias YA, Tsai HT. Effectiveness of Acupuncture for Relieving Chemotherapy-Induced Bone Marrow Suppression: A Systematic Review with a Meta-analysis and Trial Sequential Analysis. J Integr Complement Med. 2023 Oct;29(10):621-636. https://doi.org/10.1089/jicm.2022.0735

Objective	Bone marrow suppression is the most common side effect of chemotherapy that may lead to discontinuation for treatment pertaining to patients during the therapy course. Acupuncture may relieve bone marrow suppression with regulation hematopoietic function during chemotherapy. The purpose of this study is to evaluate the effectiveness of acupuncture in relieving chemotherapy-induced bone marrow suppression and determine the effects of acupuncture on bone marrow function.
Design	PubMed, Embase, Cochrane Library, Medline OVID, CINAHL Plus, Web of Science, and Chinese articles in the Airiti Library and China National Knowledge Infrastructure databases were searched up to February 2023. Publications in both English and Chinese were eligible for inclusion without any limitations on the publication date. Only randomized controlled trials investigating the impact of acupuncture on chemotherapy-induced bone marrow suppression were considered. In addition, a trial sequential analysis was performed to assess the adequacy of the current sample size.
Results	A total of **25 studies** met the inclusion criteria. Acupuncture was found to increase the levels of hematopoietic cytokine granulocyte colony-stimulating factor (G-CSF) (Hedges' $g = 0.79$, $p < 0.001$), as well as stimulate the production of white blood cells (Hedges' $g = 0.69$, $p < 0.001$), red blood cells (Hedges' $g = 0.37$, $p = 0.01$), neutrophils (Hedges' $g = 0.66$, $p < 0.001$), absolute neutrophil count (Hedges' $g = 0.89$, $p = 0.01$), hemoglobin (Hb) (Hedges' $g = 0.37$, $p = 0.02$), platelets (Hedges' $g = 0.50$, $p < 0.001$), and natural killer (NK) cells (Hedges' $g = 1.30$, $p = 0.02$). Further, the levels of platelets and NK cells were observed to increase cumulatively over time.
Conclusions	Acupuncture may improve chemotherapy-induced bone marrow suppression due to increasing levels of the hematopoietic cytokine, G-CSF and further relieving chemotherapy-induced bone marrow suppression.

1.1.3. Nian 2022 ★★

Nian J, Sun X, Zhao W, Wang X. Efficacy and safety of acupuncture for chemotherapy-induced leukopenia: A systematic review and meta-analysis. Medicine (Baltimore). 2022 Oct 21;101(42):e30995. https://doi.org/10.1097/MD.0000000000030995

Background	Leukopenia is one of most common types of myelosuppression secondary to chemotherapy. The main methods used to treat leukopenia after chemotherapy have various limitations. Several studies have reported the role of acupuncture in the prevention and treatment of leukopenia, but the quality of the study is uneven. Here, we used a systematic review and meta-analysis to evaluate the efficacy and safety of acupuncture in the treatment of leukopenia after chemotherapy.

Methods	We searched the databases of the Cochrane Central Register of Controlled Trials (CENTRAL), the Cochrane Library, Medline (via PubMed), EMBASE (via embase.com), the China National Knowledge Infrastructure Database (CNKI), the Chinese Biomedical Literature Database (CBM), the Chinese Scientific Journal Database (VIP database) and the Wanfang database to collect randomized clinical trials (RCTs) on acupuncture in the treatment of leukopenia after chemotherapy. Cochrane systematic reviewer manual 5.2 was used for bias risk assessment. RevMan5.3 statistical software was applied for statistical analysis.
Results	**Fifteen RCTs** were included in this study, with a total of **1130 patients**. Meta-analysis results showed that acupuncture can increase white blood cell (WBC) count after chemotherapy [MD = 1.18, 95% CI (0.80, 1.57), P < .00001], reduce the incidence of myelosuppression [RR = 0.38, 95% CI (0.23, 0.63), P = .0002], and improve the clinical treatment effectiveness [RR = 1.20, 95% CI (1.00, 1.43), P = .05]. The differences were statistically significant.
Conclusion	It is recommended to use acupuncture in the treatment of leukocytopenia after chemotherapy, but this result needs further research for verification.

1.1.4. Shih 2021 ☆☆

Shih YW, Su JY, Kung YS, Lin YH, To Anh DT, Ridwan ES, Tsai HT. Effectiveness of Acupuncture in Relieving Chemotherapy-induced Leukopenia in Patients With Breast Cancer: A Systematic Review With A Meta-Analysis and Trial Sequential Analysis. Integr Cancer Ther. 2021 Jan-Dec;20:15347354211063884. https://doi.org/10.1177/15347354211063884

Background	Breast cancer is one of the most common cancers and a major cause of death in women worldwide. Chemotherapy is mainly used to treat and control the progression of breast cancer. Leukopenia is the most common side effect of chemotherapy which may decrease immune function and further lead to serious fatal infections. The purpose of this study was to evaluate the effect of acupuncture on regulating hematopoietic function in chemotherapy-induced leukopenia among patients with breast cancer.
Methods	PubMed, Embase, Cochrane Library, CINAHL Plus, Web of Science, and Chinese articles in the Airiti Library and China National Knowledge Infrastructure (CNKI) databases were searched to August 2021 for papers to include in a systematic review and meta-analysis. A random-effects model was applied. The effect size was calculated by Hedges' g. Heterogeneity was determined using Cochran's Q test. Moderator analyses were performed to examine potential sources of heterogeneity. A trial sequential analysis (TSA) was conducted to determine whether the current sample size was sufficient.
Results	**Ten randomized controlled trials involving 650 participants** were eligible for inclusion. Analysis by the random-effects model showed a significant effect by acupuncture of ameliorating leukopenia during chemotherapy. Levels of white blood cells (WBCs) were increased (Hedges' g = 0.70, P < .001, I2 = 34%), neutrophil counts (Hedges' g = 0.80, P < .001, I2 = 0%) were significantly enhanced. Moreover, regardless of the manner through which acupuncture was applied, overall values of WBCs increased.
Conclusions	The current meta-analysis supports acupuncture possibly ameliorating chemotherapy-induced leukopenia, as WBC and neutrophil values significantly increased after acupuncture in patients undergoing chemotherapy. Additionally, regardless of the type of acupuncture, values of WBCs increased. These findings are actionable and support both the clinical use of acupuncture to relieve chemotherapy-induced leukopenia and further research regarding the use of acupuncture in patients experiencing immunosuppression when undergoing chemotherapy

1.1.5. Jin 2020 ☆☆

Jin H, Feng Y, Xiang Y, Zhang Y, Du W, Wasan HS, Ruan S, Huang D. Efficacy and Safety of Acupuncture-Moxibustion Therapy on Chemotherapy-Induced Leukopenia: A Systematic Review and Meta-Analysis. Evid Based Complement Alternat Med. 2020. [213531]. doi

Background	Acupuncture-moxibustion therapy (AMT), as an integral part of complementary and alternative medicine, has been used for centuries in treatment of numerous diseases. Nevertheless, there is no available supportive evidence on the efficacy and safety of acupuncture-moxibustion therapy in patients with chemotherapy-induced leukopenia (CIL). The purpose of this study is to evaluate the efficacy and safety of acupuncture-moxibustion therapy in treating chemotherapy-induced leukopenia.
Methods	Relevant studies were searched in nine databases up to September 19, 2020. Two reviewers independently screened the studies for eligibility, extracted data, and assessed the methodological quality of selected studies. Meta-analysis of the pooled mean difference (MD) and risk ratio (RR) with their respective 95% confidence intervals (CI) were calculated.
Results	**17 studies (1206 patients)** were included, and the overall quality of the included studies was moderate. In comparison with medical therapy, AMT has a better clinical efficacy for CIL (RR, 1.24; 95% CI, 1.17-1.32; P < 0.00001) and presents advantages in increasing leukocyte count (MD, 1.10; 95% CI, 0.67-1.53; P < 0.00001). Also, the statistical results show that AMT performs better in improving the CIL patients' Karnofsky performance score (MD, 5.92; 95% CI, 3.03-8.81; P < 0.00001).
Conclusion	This systematic review and meta-analysis provides updated evidence that AMT is a safe and effective alternative for the patients who suffered from CIL.

1.1.6. Ji 2016 ☆

Ji Hye Lee, Eungyeong Jang, Myeong Ho Jung, Ki-Tae Ha, Changwoo Han. Clinical effectiveness of acupuncture in the treatment of chemotherapy-induced leukopenia: A systematic review. European Journal of Integrative Medicine. 2016;8(5):802-808. [207400]. doi

Introduction	Clinical studies have suggested that acupuncture may be useful in the treatment of chemotherapy-induced leukopenia, a commonly encountered adverse event experienced by cancer patients. The aim of this meta-analysis was to determine the clinical effectiveness of acupuncture for this indication.
Methods	A search for randomized controlled trials was carried out using the following databases; China National Knowledge Infrastructure (CNKI), Excerpta Medica dataBASE (EMBASE), Public/Publisher MEDLINE (PubMed), and Cochrane Central Register of Controlled Trials (CENTRAL). The included trials were assorted into several subgroups according to the acupuncture type, and the rate of leukopenia was meta-analyzed in each subgroup. The methodological quality of these studies was assessed using the criteria for systematic reviews recommended by the Cochrane Collaboration.
Results	Four types of acupuncture were used in the included studies; conventional manual acupuncture (CA: 3 trials, n = 178), pharmacopuncture (PA: 3 trials, n = 187), warm needle acupuncture (WA: 1 trial, n = 57), and fire needle acupuncture (FA: 1 trial, n = 60). CA (RR, 0.62, 95% CI, 0.43–0.91; P = 0.01) and FA (RR, 0.20, 95% CI, 0.05–0.84; P = 0.03) reduced the leukopenia rate with statistical significance. The methodological quality was found to be insufficient, since all the included studies were at unclear or high risk of bias for at least two of six domains.

Conclusions	The results suggest that CA and FA might be beneficial for chemotherapy-induced leukopenia. However, more well-planned studies are still needed due to the small number of studies available for analysis and the considerable methodological flaws in the analyzed trials.

1.1.7. Lu 2007 Ø

Lu W, Hu D, Dean-Clower E, Doherty-Gilman A, Legedza AT, Lee H, Matulonis U, Rosenthal DS. Acupuncture for chemotherapy-induced leukopenia: exploratory meta-analysis of randomized controlled trials. J Soc Integr Oncol. 2007. 5(1):1-10. [144290].

Objective	Chemotherapy-induced leukopenia and neutropenia are common side effects during cancer treatment. Acupuncture has been reported as an adjunct therapy for this complication. The current study reviewed published randomized controlled trials of acupuncture's effect and explored the acupuncture parameters used in these trials.
Methods	We searched biomedical databases in English and Chinese from 1979 to 2004. The study populations were cancer patients who were undergoing or had just completed chemotherapy or chemoradiotherapy, randomized to either acupuncture therapy or usual care. The methodologic quality of trials was assessed. From 33 reviewed articles, **682 patients from 11 eligible trials were included in ana**lyses. All trials were published in non-PubMed journals from China.
Results	The methodologic quality of these trials was considerably poor. The median sample size of each comparison group was 45, and the median trial duration was 21 days. The frequency of acupuncture treatment was once a day, with a median of 16 sessions in each trial. In the seven trials in which white blood cell (WBC) counts were available, acupuncture use was associated with an increase in leukocytes in patients during chemotherapy or chemoradiotherapy, with a weighted mean difference of 1,221 WBC/muL on average (95% confidence interval 636-1,807; $p < .0001$).
Conclusion	**Acupuncture for chemotherapy-induced leukopenia is an intriguing clinical question**. However, the inferior quality and publication bias present in these studies may lead to a false-positive estimation. Meta-analysis based on these published trials should be treated in an exploratory nature only.

1.1.8. Liu 2003 Ø

Liu Bao-Yan, et al. Acupuncture for leucopenia induced by chemotherapy or radiotherapy-a meta-analysis. World Journal of Acupuncture-Moxibustion. 2003. 13(4):35. [126628].

Objective	In the present paper, the authors analyze the academic theses of acupuncture for treatment of leucopenia induced by chemo- or radio-therapy.
Results	**A total of 14 theses are retrieved** and all written in Chinese. Quantitative meta-analysis is done for 4 studies of dichotomous data and 5 studies of continuous data. Both of them have positive results. Majority of these trials have methodological and/or reporting shortcomings. Overall, the existing evidence supports the value of acupuncture for the treatment of leucopenia induced by chemo- or radio-therapy.
Conclusion	However, **the evidence is still not fully convincing**. There is an urgent need for well planned, large-scale and multiple-center studies to assess the effectiveness and cost-effectiveness of acupuncture under real-life conditions.

1.1.9. Li 2003

Li Xiao-Ping Men Zhen Huang Wen-Xia. [Meta Analysis of Chinese Medicine in Treating Post-Chemotherapeutic Leukopenia]. Shanghai Journal of TCM. 2003;37(8):52. [118824].

1.2. Special Acupuncture Techniques

1.2.1. Electroacupuncture

1.2.1.1. Wei 2023

Wei Y, Zheng Y. Transcutaneous electronic acupoint stimulation improves bone marrow suppression in lung cancer patients following chemotherapy: A systematic review and meta-analysis of randomized controlled trials. Medicine (Baltimore). 2023 Apr 21;102(16):e33571. https://doi.org/10.1097/MD.0000000000033571

Background	This systematic review and meta-analysis aimed to evaluate the efficacy of transcutaneous electronic acupoint stimulation (TEAS) on bone marrow suppression in patients with lung cancer after chemotherapy.
Methods	We conducted a comprehensive search of 6 databases until November 2022 and included 6 randomized controlled trials comprising 534 patients in our analysis. Eligible randomized controlled trials were included based on predefined inclusion criteria. The weighted mean difference (WMD) was calculated with all of the continuous outcomes. Heterogeneity among the included studies was evaluated using Cochran I2 and Q statistics. When the value of I2 was over 50%, a random-effects model was used. Egger test was used to assess publication bias, and trim and fill analysis was conducted if bias was detected.
Results	Our analysis found that TEAS significantly increased white blood cell counts (WMD: 0.79, 95% confidence interval (CI): 0.40-1.18, P < .001), platelet counts (WMD: 45.45, 95% CI: 30.47-60.43, P < .001), and comfort score (WMD: 6.89, 95% CI: 5.12-8.66, P < .001) compared to the conventional group. However, no significant difference was observed in red blood cell counts (WMD: 0.00, 95% CI: -0.10 to 0.10, P = .97) and hemoglobin level (WMD: -0.01, 95% CI: -2.49 to 2.46, P = .99) between the 2 groups.
Conclusions	We tentatively conclude that TEAS can reduce bone marrow suppression risk and improve comfort in lung cancer patients undergoing chemotherapy. However, larger randomized controlled trials with more diverse patient populations and blood routine indexes are urgently needed to confirm these findings.

1.2.2. Moxibustion

1.2.2.1. Li 2025

Li ZY, Chen CL, Li XY, Huo WG, Yang Y, Guo YH, Liu ZD. Comparative efficacy of moxibustion in chemotherapy-induced leukopenia: A Bayesian network meta-analysis. Integr Med Res. 2025 Jun;14(2):101145. https://doi.org/10.1016/j.imr.2025.101145

Backgound	Moxibustion has been applied in various clinical treatments, including chemotherapy-induced leukopenia. Using a Bayesian network meta-analysis, this study assessed a wide range of published data to identify the most efficient and effective method of moxibustion therapy for treating chemotherapy-induced leukopenia.

Methods	PubMed, EMBASE, and eight other databases plus two clinical trial registration platforms were searched from their respective inception date to January 2024. All randomized controlled trials (RCTs) of moxibustion for chemotherapy-induced leukopenia were included. The primary outcome indicator was white blood cell count, and the secondary outcome was the Karnofsky performance status score. Stata (version 17.0) and the gemtc package (version 1.0-0) of R (version 4.3.1) were used to perform the network meta-analysis.
Results	**Thirty RCTs with 2282 total patients** involving 12 types of moxibustion-related therapies were identified. Results of the surface under the cumulative ranking curve revealed the following treatments as most effective for leukopenia: thunder-fire moxibustion combined with medication (95.9 %), grain-sized moxibustion combined with medication (76.2 %), and herb-separated moxibustion (76.0 %). Grain-sized moxibustion combined with medication (76.5 %) ranked first in improving Karnofsky performance status scores.
Conclusion	Thunder-fire moxibustion combined with medication appears to be the most effective treatment for chemotherapy-induced leukopenia.

1.2.2.2. Xue 2025

Xue D, Lan R, Hu H, Zhang Y, Huang X. Moxibustion for chemotherapy-induced myelosuppression: A systematic review and meta-analysis. World J Acupunct Moxibustion. 2025;36(1):18-28. https://doi.org/10.1016/j.wjam.2025.12.001

Objective	To evaluate the effectiveness and safety of moxibustion for chemotherapy-induced myelosuppression.
Methods	The randomized controlled trials of moxibustion for chemotherapy-induced myelosuppression were searched in PubMed, Cochrane Library, Web of Science, Embase, China Journal Full-text Database, SinoMed, Wanfang Data Knowledge Service Platform, and VIP Chinese Journal Service Platform, from the inception of each database to July 30, 2024. RevMan5.3 and Stata18.0 were used for meta-analysis, and the quality of included literature was evaluated by Cochrane Risk of Bias (RoB) assessment tool.
Results	A total of **19 articles were included**. Moxibustion can increase white blood cell count (MD = 1.06, 95 % CI: 0.45–1.68, P = 0.0007), platelet count (MD = 32.02, 95 % CI: 16.33–47.72, P < 0.00001), hemoglobin content (MD = 5.57, 95 % CI: 1.61–9.53, P = 0.006) and neutrophil count (MD = 1.20, 95 % CI: 0.94–1.45, P < 0.00001). Moxibustion could alleviate chemotherapy-induced myelosuppression (RR = 0.70, 95 % CI: 0.56–0.86, P = 0.0007), reduced the incidences of leukopenia (RR = 0.39, 95 % CI: 0.26–0.59, P < 0.000001) and thrombocytopenia (RR = 0.33, 95 % CI: 0.21–0.53, P < 0.000001), and can improve the score of quality of life (MD = 0.55, 95 % CI: 0.32–0.79, P < 0.00001).
Conclusion	Moxibustion can increase the white blood cell count, platelet count, hemoglobin content and neutrophil count of patients after chemotherapy, alleviate myelosuppression, and the incidences of leukopenia and thrombocytopenia induced by chemotherapy, and improve the quality of life. Moxibustion is effective and safe for chemotherapy-induced myelosuppression. However, due to the relatively low quality of included studies, there are certain limitations. More high-quality studies are needed in the future to provide more reliable evidence-based basis for clinical practice.

1.2.2.3. Zhang 2018

Zhang HW, Lin ZX, Cheung F, Cho WC, Tang JL. Moxibustion for alleviating side effects of chemotherapy or radiotherapy in people with cancer. Cochrane Database Syst Rev. 2018:112p.

[196416]. doi

Background	Moxibustion, a common treatment in traditional Chinese medicine, involves burning herbal preparations containing Artemisia vulgaris on or above the skin at acupuncture points. Its intended effect is to enhance body function, and it could reduce the side effects of chemotherapy or radiotherapy and improve quality of life (QoL) in people with cancer.
Objectives	To assess the effects of moxibustion for alleviating side effects associated with chemotherapy, radiotherapy or both in people with cancer.
Methods	SEARCH METHODS: We searched the Cochrane Central Register of Controlled Trials (CENTRAL) in the Cochrane Library, MEDLINE via Ovid, Embase via Ovid and AMED (Allied and Complementary Medicine Database) from their inception to February 2018. We also searched databases in China including the Chinese BioMedical Literature Database (CBM), Chinese Medical Current Contents (CMCC), TCMonline, Chinese Dissertation Database (CDDB), China Medical Academic Conference (CMAC) and Index to Chinese Periodical Literature from inception to August 2017. Registries for clinical trials and other resources were also searched. SELECTION CRITERIA: We included randomised controlled trials (RCTs) comparing moxibustion treatment, including moxa cone and moxa stick, versus sham, no treatment or conventional treatment. DATA COLLECTION AND ANALYSIS: Two review authors (HWZ and FC) independently extracted data on study design, participants, treatment and control intervention, and outcome measures, and they also assessed risk of bias in the included studies. We performed meta-analyses, expressing dichotomous outcomes as risk ratios (RR) and continuous outcomes as mean differences (MD), with 95% confidence intervals (CI).

Main results	We included 29 RCTs involving 2569 participants. Five RCTs compared moxibustion versus no treatment, 15 compared moxibustion plus conventional treatment versus conventional treatment, one compared moxibustion versus sham moxibustion, and eight compared moxibustion versus conventional medicine. The overall risk of bias was high in 18 studies and unclear in 11 studies. Studies measured outcomes in various ways, and we could rarely pool data. Moxibustion versus no treatment: low-certainty evidence from single small studies suggested that moxibustion was associated with higher white blood cell counts (MD 1.77 × 109/L; 95% CI 0.76 to 2.78; 80 participants, low-certainty evidence) and higher serum haemoglobin concentrations (MD 1.33 g/L; 95% CI 0.59 to 2.07; 66 participants, low-certainty evidence) in people with cancer, during or after chemotherapy/radiotherapy, compared with no treatment. There was no evidence of an effect on leukopenia (RR 0.50, 95% CI 0.10 to 2.56; 72 participants, low-certainty evidence) between study groups. The effects on immune function (CD3, CD4, and CD8 counts) were inconsistent. Moxibustion versus sham moxibustion: low-certainty evidence from one study (50 participants) suggested that moxibustion improved QoL (measured as the score on the European Organization for Research and Treatment of Cancer Quality of Life Questionnaire-C30 (EORTC QLQ-C30)) compared with sham treatment (MD 14.88 points; 95% CI 4.83 to 24.93). Low-certainty evidence from this study also showed reductions in symptom scores for nausea and vomiting (MD -38.57 points, 95% CI -48.67 to -28.47) and diarrhoea (MD -13.81, 95% CI -27.52 to -0.10), and higher mean white blood cell count (MD 1.72 × 109/L, 95% CI 0.97 to 2.47), serum haemoglobin (MD 2.06 g/L, 95% CI 1.26 to 2.86) and platelets (MD 210.79 × 109/L, 95% CI 167.02 to 254.56) when compared with sham moxibustion. Moxibustion versus conventional medicines: low-certainty evidence from one study (90 participants) suggested that moxibustion improved WBC count eight days after treatment ended compared with conventional medicines (MD 0.40 × 109/L; 95% CI 0.15 to 0.65). Low-certainty evidence from two studies (235 participants) suggested moxibustion improved serum haemoglobin concentrations compared with conventional medicines (MD 10.28 g/L; 95% CI 4.51 to 16.05).Moxibustion plus conventional treatment versus conventional treatment alone: low-certainty evidence showed that moxibustion plus conventional treatment was associated with lower incidence and severity of leukopenia (WHO grade 3 to 4) (RR 0.14, 95% CI 0.01 to 2.64; 1 study, 56 participants), higher QoL scores on the EORTC QLQ-C30 (MD 8.85 points, 95% CI 4.25 to 13.46; 3 studies, 134 participants, I^2 = 26%), lower symptom scores for nausea and vomiting (RR 0.43, 95% CI 0.25 to 0.74; 7 studies, 801participants; I^2 = 19%), higher white blood cell counts (data not pooled due to heterogeneity), higher serum haemoglobin (MD 3.97 g/L, 95% CI 1.40 to 6.53; 2 studies, 142 participants, I^2 = 0%). There was no difference in platelet counts between the two groups (MD 13.48 × 109/L; 95% CI -16.00 to 42.95; 2 studies, 142 participants; I^2 = 34%).Most included studies did not report related adverse events, such as burning or allergic reactions.
Authors' conclusions	Limited, low-certainty evidence suggests that moxibustion treatment may help to reduce the haematological and gastrointestinal toxicities of chemotherapy or radiotherapy, improving QoL in people with cancer; however, the evidence is not conclusive, and we cannot rule out benefits or risks with this treatment. High-quality studies that report adverse effects are needed.

1.2.2.4. Choi 2015 ☆

Choi TY, Lee MS, Ernst E. Moxibustion for the Treatment of Chemotherapy-Induced Leukopenia: A Systematic Review of Randomized Clinical Trials. Support Care Cancer. 2015;23(6):1819-26. [184116].

Objectives	The purpose of this study is to assess the efficacy of moxibustion as a treatment of chemotherapy-induced leukopenia.
Methods	Twelve databases were searched from their inception through June 2014, without a language restriction. Randomized clinical trials (RCTs) were included if moxibustion was used as the sole treatment or as a part of a combination therapy with conventional drugs for leukopenia induced by chemotherapy. Cochrane criteria were used to assess the risk of bias.
Results	**Six RCTs with a total of 681 patients met our inclusion criteria**. All of the included RCTs were associated with a high risk of bias. The trials included patients with various types of cancer receiving ongoing chemotherapy or after chemotherapy. The results of two RCTs suggested the effectiveness of moxibustion combined with chemotherapy vs. Chemotherapy alone. In four RCTs, moxibustion was more effective than conventional drug therapy. Six RCTs showed that moxibustion was more effective than various types of control interventions in increasing white blood cell counts.
Conclusions	There is **low level of evidence based on these six trials that demonstrates the superiority of moxibustion over drug therapies in the treatment of chemotherapy-induced leukopenia**. However, the number of trials, the total sample size, and the methodological quality are too low to draw firm conclusions. Future RCTs appear to be warranted.

2. Clinical Practice Guidelines

⊕ positive recommendation (regardless of the level of evidence reported)
Ø negative recommendation (or lack of evidence)

2.1. Arbeitsgemeinschaft Gynäkologische Onkologie (AGO, Allemagne) 2018 Ø

Diagnosis and Treatment of Patients with Primary and Metastatic Breast Cancer. Complementary Therapy Survivorship. Arbeitsgemeinschaft Gynäkologische Onkologie (AGO). 2018.35P. [182073].

Leucopenia. *Moxibustion* : Level of evidence 2b (individual cohort study), grade of evidence (B), AGO recommendation grade (+/-) This examination or therapeutic intervention has for the patient no advantage shown. It can be done in individual cases. Based on current knowledge, there is currently no general recommendation to be pronounced.

2.2. Association Francophone des Soins Oncologiques de Support (AFSOS, France) 2014 ⊕

Association Francophone des Soins Oncologiques de Support (AFSOS). Fiches Réferentiels : L'acupuncture en onco-hématologie MAJ 2014 (online)

Leucopénie. Acupuncture (Niveau de preuve HAS : B)