

Application of P6 Acupressure on Children with Acute Lymphoblastic Leukemia Experiencing Post-Chemotherapy Nausea and Vomiting

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Abstract

Cancer refers to a condition where cells grow uncontrollably, potentially harming nearby healthy tissues and spreading via the lymphatic system and bloodstream. Among various types of leukemia, Acute Lymphoblastic Leukemia (ALL) is the most frequently found in pediatric patients. Chemotherapy, the primary treatment, often causes nausea and vomiting, affecting the child's comfort and nutritional intake. This study aimed to evaluate the effectiveness of P6 acupressure therapy in reducing nausea and vomiting in children with ALL. A case study was conducted involving two children undergoing chemotherapy at unit Anggrek, RS X, Jakarta. P6 acupressure was applied for 3–4 consecutive days. Results indicated a significant decrease in nausea intensity and vomiting frequency in one patient, while the other showed a mild reduction. The findings demonstrate that P6 acupressure is an effective, non-pharmacological nursing intervention for managing chemotherapy-induced nausea and vomiting in pediatric patients. This therapy can be safely taught to caregivers as part of home-based supportive care, providing practical implications for nursing practice in pediatric oncology settings.

Background

Cancer is a condition marked by the uncontrolled proliferation of abnormal cells, which can harm nearby healthy tissues and spread throughout the body via the lymphatic system and bloodstream. Based on WHO data from 2017, there were roughly 14.1 million cancer cases worldwide, with around 8.2 million deaths attributed to cancer. Among children, leukemia stands out as the most prevalent type of cancer, representing a large share of pediatric malignancies. Globally, it is estimated that approximately 120 children per one million population are diagnosed with blood cancer, with Acute Lymphoblastic Leukemia (ALL) being the most common form. ALL represents approximately 74% of all childhood leukemia cases. It is a malignancy of the blood-forming tissues characterized by the replacement of normal bone marrow cells with abnormal leukemic cells, which impairs normal hematopoietic function (Ristika, 2019).

In 2018, the global incidence of leukemia was estimated at 60,300 cases. The disease burden was higher among males, with approximately 35,030 new cases and 14,270 deaths, compared to 25,270 cases and 10,100 deaths in females (American Cancer Society, 2018 in Ristika, 2019). WHO reported that in Indonesia, from 2014 to 2019, there were 35,870 cases of ALL, resulting in 11,314 deaths. Local hospital data from the pediatric inpatient unit of RS X showed 146 pediatric ALL cases between 2024 and 2025, highlighting the urgency and clinical significance of this condition.

Chemotherapy is the main treatment for children diagnosed with ALL, aimed at suppressing cancer cell growth. However, its physiological side effects include hair loss, nausea, vomiting,

oral ulcers, reduced appetite, diarrhea, and fatigue. Research by Fatikasari (2018) reported that nausea and vomiting occurred in 97% of pediatric chemotherapy patients due to the emetogenic nature of the drugs. Nausea is an unpleasant sensation with an urge to vomit, while vomiting is the forceful expulsion of gastric and intestinal contents through the mouth (Zhong et al., 2021).

Based on interviews with nurses, it was found that 8 out of 10 children undergoing chemotherapy for ALL experienced nausea and vomiting. This is attributed to chemotherapy drugs targeting both cancerous and fast-growing healthy cells, including those in the gastrointestinal tract. These side effects pose significant challenges in managing nutritional intake, emotional well-being, and overall therapy adherence. Although pharmacological interventions such as antiemetics are commonly used, approximately 60% of patients continue to experience symptoms (Gustini et al., 2019). Therefore, non-pharmacological complementary therapies are increasingly considered to support symptom management.

Acupressure is a form of therapy that involves applying pressure using fingers or blunt tools to specific points on the body—similar to acupuncture but without the use of needles—to help balance the body's energy flow (Bunga & Siswadi, 2024). It is recognized as an effective, simple, and low-risk nursing intervention for reducing nausea and vomiting (Afrianti et al., 2020). Prior studies by Lydia (2019) and Rukayah et al. (2018) have demonstrated the gradual effectiveness of P6 point acupressure in alleviating chemotherapy-induced nausea and vomiting in pediatric patients. Given this context, the author aims to explore and document the clinical application of P6 acupressure therapy as a non-pharmacological strategy for managing nausea and vomiting in children undergoing chemotherapy due to ALL.

Methods

The type of research used was qualitative descriptive research with a case study method conducted in the Anggrek Unit, RS X, Jakarta. This study aimed to assess the effectiveness of P6 acupressure therapy as a non-pharmacological strategy for managing nausea and vomiting in children undergoing chemotherapy for Acute Lymphoblastic Leukemia (ALL). This design allowed the researchers to present a real-world and detailed context regarding patients' experiences and the nursing interventions implemented.

The population in this study was pediatric patients undergoing chemotherapy in the Anggrek Unit, RS X, Jakarta. The sample was selected using purposive sampling with the following inclusion criteria: (1) diagnosed with ALL; (2) currently undergoing chemotherapy; (3) experiencing nausea and vomiting as side effects of chemotherapy; and (4) having complete medical and nursing documentation. Two children were selected, namely Patient A as the main case and Patient B as the comparison case. Monitoring was conducted over approximately one week from May to June 2025.

Before data collection, the researcher obtained official permission from the hospital management and the head of the Anggrek Unit. The research ensures adherence to the ethical principles of respect for persons, beneficence, and justice. Written informed consent was obtained from the parents or legal guardians of each patient, and verbal assent was sought from the children in an age-appropriate manner. The researcher, who is a nursing student accompanied by a nurse trained in acupuncture techniques, prepared all the necessary materials, including hand sanitizer and a stopwatch to maintain consistency in the timing of the intervention. Coordination was carried out with the pediatric oncology team to ensure that the intervention did not interfere with medical procedures.

The instruments used included observation sheets to record the child's progress during treatment, informal interview guides with parents or family members of patients, and medical document review formats. Data were collected from nursing daily records, nursing assessment results, and direct interactions with patients, families, and other medical teams.

The intervention provided was P6 (*Nei Guan*) acupressure therapy, performed as follows: (1) The researcher performed hand hygiene using soap and water or an alcohol-based hand rub; (2) The patient was positioned in a lying, sitting, or other comfortable position; (3) The P6 point was located on the wrist, three finger-widths distal to the wrist crease, between the flexor carpi radialis and palmaris longus tendons; (4) Firm yet gentle pressure was applied to the P6 point using the thumb in a circular motion for three minutes on each wrist; (5) The intervention was performed two to four times daily for 3–4 consecutive days, with adjustments made according to the patient's condition and tolerance.

Data were analyzed thematically in three stages: (1) Open coding of data from observations, interviews, and document reviews; (2) grouping codes into pre- and post-intervention categories; and (3) identifying key themes representing the effectiveness of P6 acupressure as a non-pharmacological strategy for managing chemotherapy-induced nausea and vomiting in children with ALL.

Effectiveness was evaluated through subjective reports from patients and caregivers regarding the intensity of nausea, objective observation of vomiting episodes by researcher, and daily documentation of symptom changes in observation sheets. Patient safety, comfort, and emotional well-being were prioritized throughout the study.

Result and Discussion

Acute Lymphoblastic Leukemia (ALL) is the most prevalent type of leukemia in children, accounting for approximately 74% of all pediatric leukemia cases (Ristika, 2019). This study involved two pediatric patients, referred to as Patient A and Patient B, both of whom experienced nausea and vomiting following chemotherapy.

Patient A, a 12-year-old boy undergoing induction-phase chemotherapy, exhibited significant improvement after receiving P6 acupressure therapy. The intervention was applied for three consecutive days. Based on periodic nursing evaluations, the frequency of vomiting decreased from three episodes on the first day to none on the third day. Likewise, the intensity of nausea diminished from persistent to none. These findings are consistent with research by Rahmah & Alfiyanti (2021) and Yuliar et al. (2019), which confirm that stimulation of the P6 (*Nei Guan*) point can effectively reduce chemotherapy-induced nausea and vomiting in pediatric patients. Anatomically, the P6 point is located approximately three finger widths below the inner wrist, between the palmaris longus and flexor carpi radialis tendons. Stimulation at this point influences the autonomic nervous system and central vomiting center, balancing energy flow and decreasing nausea signals.

Patient B, a 15-year-old girl with the same diagnosis and chemotherapy regimen, demonstrated only partial improvement. Although she initially denied experiencing nausea, she vomited once on the third day. Despite the less prominent results, the acupressure intervention still contributed to a slight reduction in nausea frequency. These differences may be attributed to individual variations in response to therapy, psychological factors, or differences in

chemotherapy tolerance. Similar variability was reported by Rukayah et al. (2018), who emphasized that acupressure effectiveness may differ based on patient condition and treatment consistency.

In addition to the two primary patients, the therapy was also applied to three other pediatric patients with similar symptoms. Among them, two reported a decrease in vomiting frequency and improved appetite. P6 (*Nei Guan*) is located approximately three finger-widths below the transverse crease of the wrist, between the tendons of the palmaris longus and flexor carpi radialis muscles. Stimulation of this point activates sensory nerve fibers that send signals to the central nervous system, modulating the vomiting center in the medulla oblongata and regulating autonomic nervous system activity. This process helps to normalize gastric motility and reduce excessive parasympathetic activity, thereby alleviating nausea and vomiting. In addition, P6 stimulation influences neurotransmitter regulation, particularly serotonin (5-HT) and dopamine, which play significant roles in chemotherapy-induced nausea and vomiting (CINV). From the perspective of Traditional Chinese Medicine (TCM), P6 lies on the pericardium meridian and functions to harmonize the stomach, descend rebellious Qi, and calm the mind, thus restoring physiological balance and reducing the urge to vomit (Alhusamiah et al., 2024).

These findings reinforce the potential of P6 acupressure as a supportive intervention in managing chemotherapy-induced symptoms and are consistent with the results reported by Srinatania and Carlina (2023), who observed that applying acupressure at the P6 point effectively reduced chemotherapy-induced nausea and vomiting in pediatric cancer patients. The similarities in outcomes highlight the potential of acupressure as a safe, low-cost, and effective non-pharmacological intervention. Moreover, the therapy is non-invasive, free from side effects, and can be easily taught to caregivers as part of independent nursing care. Nurses play a key role not only in administering interventions but also in educating families to perform acupressure safely and effectively at home. This is important, as research by Utami and Anggraeni (2023) found that the quality of life of children with chronic illnesses is greatly influenced by family involvement, including economic capacity and daily caregiving.

Complementary to acupressure, distraction techniques such as origami folding were also employed. Patients expressed enjoyment and showed reduced anxiety during hospitalization. This aligns with the findings of Sitorus (2020), who stated that play therapy can improve children's emotional well-being and self-perception during medical treatment. According to Rosiana et al. (2022), distraction therapy helps shift focus from pain or discomfort, leading to relaxation, stress relief, and a subsequent decrease in nausea.

Overall, the combination of P6 acupressure and distraction therapy presents an effective, safe, and practical non-pharmacological approach for managing nausea and vomiting in children undergoing chemotherapy for ALL. These interventions contribute to improved patient comfort, reduced symptom burden, and enhanced quality of care in pediatric oncology nursing.

Conclusion

Based on the findings of this study, it can be concluded that the application of acupressure therapy at the Pericardium 6 (P6) point effectively reduces symptoms of nausea and vomiting in pediatric patients with Acute Lymphoblastic Leukemia (ALL) undergoing chemotherapy. Patient A showed a significant decrease in both nausea intensity and vomiting frequency after three consecutive days of acupressure therapy. Patient B demonstrated a more moderate response, but still experienced a reduction in symptoms. Similar effects were observed in other patients who received the intervention, indicating that acupressure therapy can offer consistent

symptom relief. In addition, distraction techniques such as origami folding were shown to alleviate anxiety, enhance emotional comfort, and indirectly contribute to the reduction of nausea symptoms. These findings support the implementation of acupressure and distraction as effective, safe, and easily applicable non-pharmacological interventions in pediatric oncology care. Nurses are encouraged to incorporate these interventions into clinical practice and educate family members to perform them independently at home. The integration of acupressure and distraction techniques into nursing care standards can improve symptom management, promote caregiver involvement, and enhance the overall quality of pediatric nursing services.

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