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**Analysis of quality of life in patients with malignant tumours undergoing systemic treatment: molecularly targeted therapy versus conventional chemotherapy**

**Summary**

Cancer presents a significant health, social, and economic challenge for most countries worldwide. The International Agency for Research on Cancer (IARC) estimates that approximately 20 million new cases of malignant tumours and 9.7 million cancer-related deaths were reported globally in 2022.

The progress of medical science has resulted in the availability of safer and more effective therapies for patients. Personalised medicine facilitates the administration of molecularly targeted drugs, which exclusively act on the specific molecular targets of cancer cells. This targeted approach is known to have lower toxicity compared to conventional chemotherapy, resulting in the manifestation of less severe and bothersome treatment side effects.

Given the chronic nature of cancer, the impact of the disease's progression and treatment on patients' quality of life is profound and cannot be overstated. Schipper, the pioneer of the health-related quality of life concept, defines it as the patient's subjective experience of the functional ramifications of the disease and its treatment.

The assessment, measurement, categorisation, and comparison of quality of life pose significant challenges despite its utmost significance to patients. When evaluating quality of life, it is crucial to differentiate between the patient's subjective perception of quality of life and the objective medical indications of their health status.

The introduction of questionnaire-based methods has significantly contributed to the development of research on the interdisciplinary view of patient functioning in illness by assessing quality of life. Questionnaire tools make it possible to expand the medical point of view, including clinical parameters, with values expressed by the patient regarding their mental state, well-being, perceived problems, and difficulties. These questionnaires help develop quantitative outcomes, allowing for comparisons of changes in the level of quality of life over time and across different study groups.

Quality of life measurement tools can be categorised as general (generic) questionnaires, which measure quality of life across a broad range, and specific questionnaires, which delve into measuring quality of life in detail for specific conditions or disease groups.

By adopting a holistic approach to the care of patients with malignant tumours, it becomes possible to recognise the effects of the disease on patients and understand their capabilities, limitations, and needs. These factors serve as the foundation for strategising and implementing medical, psychological, and social rehabilitation interventions to enhance their overall quality of life.

This study aimed to examine the factors contributing to assessing patients' quality of life with selected malignant tumours. The main goal was to determine if there were significant differences in the perceived quality of life among patients receiving conventional chemotherapy versus those undergoing molecularly targeted therapy. Additionally, the study sought to establish whether there were notable discrepancies in quality of life between male and female cancer patients and to explore the relationship between quality of life, patient age, and time since cancer diagnosis. Further specific objectives included identifying significant differences in quality-of-life levels among patient groups with selected malignant tumours, where treatment method or gender played a distinguishing role.

A questionnaire survey was carried out among 260 patients, including 98 women (37.7%) and 162 men (62.3%), who had colorectal cancer (95; 36.5%), hepatocellular carcinoma (28; 10.8%), prostate cancer (49; 18.9%), multiple myeloma (63; 24.2%), and chronic myeloid leukaemia (25; 9.6%). At the time of the survey, these patients received either classical chemotherapy (102; 39.2%) or molecularly targeted therapy (158; 60.8%). The survey utilised standardised questionnaires validated for application in Poland: QLQ-C30 (v. 3.0), QLQ-CR29, QLQ-PR25, QLQ-HCC18, QLQ-MY20, and FACT-Leu. The study was conducted anonymously among adults, and participation was voluntary. Participants were also informed of the research objective.

The study found notable differences in the quality of life of patients with malignant tumours treated with conventional chemotherapy and those who received molecularly targeted therapy. Patients receiving molecularly targeted drugs showed a significantly higher overall quality of life ( $p=0.029$ ). They scored better in four functional status scales: role functioning ( $p=0.046$ ), emotional functioning ( $p=0.014$ ), cognitive functioning ( $p=0.013$ ), and social functioning ( $p=0.028$ ). In terms of disease symptom severity, patients treated with

conventional chemotherapy experienced significantly more nausea and vomiting ( $p<0.001$ ) and appetite loss ( $p<0.001$ ).

Notable variations in the quality of life were found among female and male cancer patients. Men exhibited higher levels of physical functioning ( $p=0.014$ ), emotional functioning ( $p<0.001$ ) and cognitive functioning ( $p=0.035$ ). Conversely, women presented higher levels of fatigue ( $p<0.001$ ), pain ( $p=0.027$ ), insomnia ( $p=0.005$ ) and experienced financial difficulties ( $p=0.045$ ).

The study demonstrated a significant correlation between patients' quality of life with selected malignancies and age. The assessment of overall quality of life level ( $p=0.001$ ), physical functioning ( $p=0.004$ ), and cognitive functioning ( $p=0.017$ ) all exhibited a decline with increasing age.

A correlation was also observed between the level of quality of life of patients with selected malignant tumours and the time since cancer diagnosis. As time passed, the overall quality of life assessment level decreased ( $p=0.045$ ), while the level of role functioning increased ( $p=0.01$ ).

Pursuing the other specific objectives of the study revealed the following significant variations in quality-of-life levels of:

- colorectal cancer patients treated with conventional chemotherapy and those undergoing molecularly targeted therapy,
- women and men with colorectal cancer,
- women and men with multiple myeloma undergoing molecularly targeted therapy,
- male prostate cancer patients treated with conventional chemotherapy and those undergoing treatment with targeted androgen receptor modulators,
- women and men with chronic myeloid leukaemia undergoing molecularly targeted therapy.

Based on the results, it can be inferred that the quality of life in patients with malignant tumours is determined by factors such as the treatment approach (molecularly targeted therapy versus conventional chemotherapy), gender, age, and duration since cancer diagnosis. The higher level of quality of life demonstrated by patients undergoing molecularly targeted therapies may serve as a catalyst for the further development of personalised medicine.

Quality of life assessment should be an integral part of oncology patient care. Employing standardised survey tools is a rational approach. Due to the ever-changing nature of quality of

life, its evaluation should be conducted at the outset of the diagnostic and therapeutic procedure and subsequent disease stages. By monitoring changes in individual quality-of-life parameters, it becomes possible to pinpoint areas where patients experience compromised functioning or an escalation in specific disease symptoms and treatment-related side effects. This knowledge enables prompt intervention to mitigate or diminish distressing symptoms related to the ailment and its treatment while offering suitable assistance.

When evaluating the quality of life of patients with malignant tumours, factors that determine their levels in specific areas must be considered. These factors include the type of therapy, gender, age and disease duration. Based on the quality-of-life assessment tool results, tailored therapeutic and care measures should be implemented.

Strategies for monitoring the health status of patients with malignant tumours should be comprehensive. In addition to clinical results, it is also crucial to consider the patient's opinions and experiences. With such an approach, the diagnostic and therapeutic process can be optimised by tailoring treatment and care to the patient's specific needs.