The benefits of fasting for patients who are immunocompromised and undergoing cancer treatment: An integrative research review

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**The Benefits of Fasting Used to Enhance Cancer Treatment for Patients who are Immunocompromised and/or Undergoing Treatment**

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**BACKGROUND AND SIGNIFICANCE**

- The concept of targeting the metabolism of tumor cells has been around since the 1950s (Englert and Powell, 2016).
- Standard treatments for cancer today include chemotherapy, radiation therapy, or a combination of the two. These generally come with a multitude of side effects including severe immunosuppression, development of secondary tumors, and toxicity to multiple organ systems (Letteri-Barbato & Aquilano, 2018).
- There has been remarkable advances in the treatment of cancer but there still remains the need for strategies to help reduce the amount of side effects, acute and long term, oncologic emergencies, and adverse events that can have a profound effect on the patients quality of life (Nencioni, Caffa, Cortellino, & Longo, 2018).
- Evidence suggests that fasting may have a profound benefit to the immune system and may be a feasible approach to enhance the efficacy and tolerability of chemotherapy (Dorff et al., 2016).
- The literature also shows evidence that fasting reduces side effects of the cytotoxic treatments when fasting is incorporated into the regimens (O’Flanagan, Smith, McDonell, & Hursting, 2017).

**RESEARCH QUESTION**

“Can fasting have a beneficial effect on the immune system and efficacy of chemotherapy for patient’s who are immunocompromised or undergoing chemotherapy treatment?”

**LITERATURE RESEARCH FLOW DIAGRAM**

**METHODS**

- An integrated review of the literature was conducted using the methodology described by Whitemore and knaff (2005) and Brown (2018).
- A search of the articles was completed using five of the major literature databases: Cochrane Library, PubMed, Medline, CINHAL, and Health Source: Nursing/Academic Edition. The key words used to perform the search were: “fasting” and “immune system” and “chemotherapy”.
- Search criteria was limited to “free full text articles” between the years of 2015 and 2020 except for PubMed.
- A total of sixteen articles were located and ten were found by bibliographic mining. All articles were critically appraised using evaluative checklists and the EBR tool created by Long and Ganaway (Brown, 2018; 2015).
- From the twenty-seven articles found, one was a duplicate and twelve were considered to be appropriate and useful evidence for this review.
- Findings from the studies were synthesized for comparative analysis of results.

**RESULTS**

- 26 articles were initially identified; 12 were included in final sample.
- All articles were critically appraised using evaluative checklists and the EBR tool created by Long and Ganaway (Brown, 2018; 2015).

**LITERATURE SYNTHESIS**

- The majority of the literature reviews scientific data on the cellular level looking at the systemic and cellular response to fasting through IGF-1 (Insulin-like growth factor 1) and PKA (protein kinase A) activity in various cell populations in conjunction with exposure to chemotherapy treatment.
- Various lengths of fasting were observed in these articles such as prolonged fasting (up to 48 hours), short-term fasting, calorie restriction, and diets that mimic fasting.
- The literature has shown that fasting can improve the efficacy of chemotherapy (Zhang, Deng, & Kho, 2020).
- There is evidence that fasting reduces side effects of the cytotoxic treatments when fasting is incorporated into the regimens (O’Flanagan, Smith, McDonell, & Hursting, 2017).
- According to an integrative research review done by Englert & Powell (2016), “The specific effect of these therapies on the T cell function and differentiation remains to be determined.”

**CLINICAL IMPLICATIONS**

- In the cohort study that included human subjects, fasting for 72 hours around chemotherapy administration was shown to be safe and feasible for cancer patients (Dorff et al., 2016).
- More clinical data is needed in order to determine which cancers and at what stage in combination with the type of fasting or time period in which the fasting should occur, to determine the effectiveness and establish future guidelines in the clinical setting.

**CONCLUSION**

- The overall literature review concludes that fasting not only has a beneficial effect on the immune system but also can help to mitigate some of the side effects caused by chemotherapy and increase its efficacy on the tumor itself.
- Further level 1 evidence, including randomized control trials, are needed in order to definitively answer this question.

**REFERENCES**

Available upon request.

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