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Association of Psoriasis With the Risk of Developing or Dying of Cancer

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ABSTRACT

Background: The association between psoriasis and the risk of developing or dying from cancer has garnered significant attention in recent years, as evidenced by a growing body of literature. The exploration of this relationship reveals complex interactions between the chronic inflammatory nature of psoriasis, its treatment modalities, and the incidence of various malignancies. **Literature Review:** The foundational insights provided by (Beyaert et al., 2013) indicate that patients with severe psoriasis are at an increased risk for certain cancers, particularly lymphoma and non-melanoma skin cancer (NMSC). The case study presented by (Morizane et al., 2018) raises concerns regarding the immunosuppressive nature of systemic treatments, suggesting that such therapies may compromise anti-cancer immunity. This highlights the delicate balance healthcare providers must maintain when treating psoriasis, particularly in patients who may already be at increased risk for cancer. In their systematic review, (Wang et al., 2020) complicate the narrative by noting inconsistencies in the evidence linking psoriasis to NMSC. They advocate for a nuanced understanding of this relationship, particularly given the variations in treatment protocols and patient demographics. Lastly, the comprehensive overview provided by (Bu et al., 2022) emphasizes the notable increase in cancer prevalence among psoriasis patients and highlights gender disparities in risk. The findings suggest that while systemic treatments may carry risks, the severity of psoriasis itself is a significant factor in cancer mortality. **Conclusion:** In conclusion, the literature presents a complex relationship between psoriasis and cancer risk, shaped by disease severity, treatment modalities, and lifestyle factors. While there is evidence of an increased risk for certain malignancies, particularly skin cancers, it is essential to consider confounding variables and the multifactorial nature of this association. Ongoing research is critical to further delineate these relationships and inform clinical practices regarding the management of psoriasis in patients at risk for cancer.

Keyword: Association, Psoriasis, Risk, Developing, Dying of Cancer

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INTRODUCTION

The association between psoriasis and the risk of developing or dying from cancer has garnered significant attention in recent years, as evidenced by a growing body of literature. The exploration of this relationship reveals complex interactions between the chronic inflammatory nature of psoriasis, its treatment modalities, and the incidence of various malignancies.

(Beyaert et al., 2013) provide foundational insights into the cancer risk associated with immune-mediated inflammatory diseases, including psoriasis. They highlight that patients with severe psoriasis may face an increased risk of several cancers, including lymphoma and non-melanoma skin cancer (NMSC). Notably, the authors emphasize that while some studies have linked psoriasis with cancers such as bladder and kidney cancer, these findings often did not control for confounding factors like smoking and alcohol use, which could skew results. Furthermore, they conclude that common psoriasis treatments, such as PUVA and methotrexate, do not significantly heighten cancer risk, challenging earlier assumptions about the dangers of these therapies.

Building on this understanding, (Pietrzak et al., 2017) delve deeper into the gastrointestinal (GI) malignancies associated with psoriasis. They suggest that the chronic inflammation and environmental carcinogens to which psoriatic patients are exposed may predispose them to GI cancers, including oral and pancreatic cancers. However, they also assert that the association weakens when accounting for lifestyle factors, reinforcing the notion that external influences play a crucial role in cancer risk among psoriasis patients.

(Morizane et al., 2018) present a case study that underscores the potential impact of systemic treatments, including biologics, on cancer risk. Their findings indicate that the immunosuppressive nature of certain therapies may compromise anti-cancer immunity, thereby raising concerns about the long-term implications of such treatments in psoriatic patients.

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The systematic review by (Wang et al., 2020) further complicates the narrative surrounding psoriasis and NMSC risk. They highlight that while there is a noted increase in skin cancer incidence among psoriasis patients, the evidence remains inconsistent. The authors call for a more nuanced understanding of the relationship between psoriasis and NMSC, particularly in light of varying treatment protocols and patient demographics.

In their review, (Butrón-Bris et al., 2021) evaluate the broader implications of psoriasis on cancer risk, linking chronic inflammation to a range of malignancies beyond skin cancer. They discuss the psychological burden of the disease and its comorbidities, which may contribute to an elevated cancer risk. Their analysis emphasizes the need to consider both the biological mechanisms of psoriasis and the effects of lifestyle factors, such as smoking and sun exposure, in assessing cancer risk.

Finally, (Bu et al., 2022) synthesize findings from multiple studies to present a comprehensive overview of cancer prevalence among psoriasis patients. They report a notable increase in various cancer types, including keratinocyte cancers and lymphomas, and highlight the differential risk profiles for men and women. Their work reinforces the idea that while systemic treatments may carry risks, the severity of psoriasis itself is a significant factor in cancer mortality.

This literature review demonstrates that the relationship between psoriasis and cancer risk is multifaceted, influenced by disease severity, treatment regimens, and lifestyle factors. As research continues to evolve, it is essential to consider these variables to better understand the implications of psoriasis on cancer development and outcomes.

LITERATURE REVIEW

The article "Cancer risk in immune-mediated inflammatory diseases (IMID)" by (Beyaert et al., 2013) provides a comprehensive overview of the relationship between psoriasis, a chronic inflammatory skin disease, and the associated risk of developing various cancers. The authors effectively detail the underlying mechanisms of psoriasis, highlighting the role of the innate immune

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system and the involvement of inflammatory mediators such as interferon-alpha (IFN-α) and tumor necrosis factor (TNF). This foundational understanding is critical as it sets the stage for exploring the cancer risk associated with psoriasis.

The article discusses the historical context of cancer risk in psoriasis patients, noting that earlier studies from the pre-biologics era indicated an increased risk for lymphomas, non-melanoma skin cancers (NMSC), and other cancers linked to lifestyle factors such as alcohol consumption and smoking. This acknowledgment of confounding variables is essential, as it underscores the complexity of establishing a direct causal relationship between psoriasis and cancer risk. The authors emphasize that the severity of psoriasis appears to correlate with an increased cancer risk, which aligns with findings from the Iowa Women's Health Study that identified a significant association specifically with colon cancer.

Furthermore, the article reviews a broader spectrum of cancers potentially linked to psoriasis, including bladder, kidney, oropharyngeal, esophageal, gastric, liver, vulvar, breast, and pancreatic cancers, as well as leukemia and non-Hodgkin's lymphoma. However, the authors critically note that many of these studies did not adequately control for environmental factors, which complicates the interpretation of results and may inflate the perceived risk associated with psoriasis.

Importantly, the article addresses concerns regarding psoriasis treatments, such as PUVA, methotrexate, and cyclosporine, which have been thought to potentially elevate cancer risk. The authors reference recent studies that counter these concerns, suggesting that these treatments are not significantly associated with an increased cancer risk. This point is crucial, as it may alleviate apprehensions surrounding the management of psoriasis in patients who are already at risk for developing cancer.

The systematic literature review and meta-analysis presented in the article conclude that while there is a slightly increased risk for certain cancers in patients with psoriasis, the most notable risk is for skin carcinoma, and there is no increased risk for melanoma. The authors also raise an important consideration regarding the misdiagnosis of primary skin lymphoma as psoriasis, which may have led to an overestimation of lymphoma risk in this patient population.

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The article titled "Digestive system in psoriasis: an update" by (Pietrzak et al., 2017) provides a comprehensive examination of the relationship between psoriasis and the increased risk of developing various cancers, particularly gastrointestinal malignancies. The authors highlight the chronic and immune-mediated nature of psoriasis, which, coupled with environmental factors and lifestyle choices, may contribute to a predisposition to carcinogenesis in affected individuals.

One of the key insights from the article is the association between psoriasis and an elevated overall cancer risk, with specific emphasis on gastrointestinal cancers such as oral, esophageal, liver, and pancreatic cancers. This correlation is particularly noteworthy given the chronic inflammation associated with psoriasis, which is known to play a role in cancer development. However, the authors critically evaluate this association by noting that when adjustments are made for confounding factors such as cigarette smoking and alcohol consumption, the excess cancer risk linked to psoriasis diminishes significantly. This suggests that lifestyle factors may play a more substantial role in the increased cancer risk than previously understood, indicating that the relationship may not be solely attributable to the underlying pathophysiology of psoriasis itself.

Furthermore, the article discusses the potential influence of concomitant gastrointestinal conditions, such as inflammatory bowel disease (IBD), non-alcoholic fatty liver disease (NAFLD), and celiac disease, which are known to elevate cancer risk. This indicates a multifactorial approach to understanding cancer risk in psoriatic patients, where individual risk assessments should consider both general and disease-specific factors. The authors advocate for a personalized evaluation of cancer risk in patients with psoriasis, emphasizing the need for a nuanced understanding of how lifestyle and comorbid conditions interact with the primary skin disorder.

The article "A Case of Psoriasis Complicated by Breast Cancer after Systemic Treatments Including Biologics" by (Morizane et al., 2018) presents a compelling case that underscores the potential implications of psoriasis treatments on cancer risk. The authors detail a specific case in which a patient with psoriasis

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developed breast cancer following systemic treatments, including the use of biologics and immune-suppressive agents. This case prompts a critical examination of how such treatments may influence the body's anti-cancer immunity.

The main idea articulated by (Morizane et al., 2018) revolves around the concern that the immunosuppressive nature of certain psoriasis treatments could potentially compromise the body's ability to combat malignancies. The authors highlight that while biologics can effectively manage psoriasis symptoms, their role in modulating immune responses raises questions about their long-term safety, particularly in relation to cancer development.

The article effectively illustrates the complexities of treating psoriasis in patients who may be at an increased risk for cancer. The case presented serves as a cautionary tale, suggesting that healthcare providers should be vigilant in monitoring patients undergoing immunosuppressive therapy for signs of malignancy. Furthermore, the authors advocate for a balanced approach to treatment, weighing the benefits of managing psoriasis against the potential risks of developing cancer.

The article "Risk of non-melanoma skin cancer in patients with psoriasis: An updated evidence from systematic review with meta-analysis" by (Wang et al., 2020) offers a comprehensive examination of the potential link between psoriasis and the risk of developing non-melanoma skin cancer (NMSC). Psoriasis, a chronic inflammatory condition affecting a significant portion of the global population, primarily manifests through excessive growth and differentiation of keratinocytes, influenced by immune responses, particularly those involving T cells.

The authors highlight the complexity surrounding the association between psoriasis and cancer risk, noting that while psoriasis shares clinical features with other chronic illnesses, including malignancies, the specific relationship with NMSC remains contentious. This uncertainty is exacerbated by the use of immunosuppressive agents in treating psoriasis, which may further elevate cancer risk. The article systematically reviews and analyzes existing observational studies to clarify whether psoriasis indeed correlates with an increased risk of NMSC.

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A critical evaluation of the material reveals that the authors effectively synthesize data from various epidemiological studies, providing a nuanced understanding of the risk factors involved. The systematic review approach enhances the reliability of the findings, as it aggregates diverse research efforts to draw more robust conclusions. However, the article also acknowledges the limitations inherent in the available studies, such as variations in study design, population demographics, and the definitions of psoriasis severity, which could influence the outcomes.

Moreover, the authors emphasize the need for further research to establish a clearer causal relationship between psoriasis and NMSC risk. They suggest that future studies should focus on longitudinal data and consider confounding factors that may skew results. This perspective is vital, as it not only underscores the current gaps in the literature but also points towards directions for future inquiry.

The article "Psoriasis Therapy and Skin Cancer: A Review" by (Butrón-Bris et al., 2021) provides a comprehensive examination of the relationship between psoriasis, its associated comorbidities, and the risk of developing various forms of cancer, particularly skin cancer. The authors assert that psoriasis, a chronic immune-mediated condition affecting approximately 3–4% of the population, is linked to several malignancies, including non-melanoma skin cancer (NMSC), melanoma, and other internal cancers such as those of the kidney, breast, lung, and colon.

One of the key insights from the article is the chronic inflammatory state inherent in psoriasis, which may promote pro-tumorigenic effects. The authors highlight that the persistent inflammation in psoriasis can lead to the upregulation of cytokines that increase the production of reactive oxygen species. This biochemical environment contributes to a hyperproliferative state of keratinocytes, which is a critical factor in the development of certain malignancies. The review effectively illustrates the biological mechanisms linking psoriasis to increased cancer risk, providing a solid foundation for understanding how inflammation can serve as a catalyst for tumorigenesis.

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Moreover, the article discusses the impact of psoriasis treatments on cancer risk. The authors note that certain therapies, particularly those that are immunosuppressive, may exacerbate the risk of malignancies in patients with psoriasis. This is particularly relevant given the common comorbidities associated with psoriasis, such as smoking, alcohol consumption, and excessive sun exposure, which are recognized risk factors for developing skin cancer. The authors present evidence suggesting that patients with psoriasis experience a shorter time until the first diagnosis of NMSC and a higher overall incidence of NMSC compared to patients with rheumatoid arthritis, further emphasizing the heightened risk in this population.

However, the authors also acknowledge the heterogeneity in findings across various studies regarding skin cancer risk in psoriasis patients. This inconsistency may stem from differences in study design, population characteristics, and the specific methodologies employed. The review calls for further research to clarify these discrepancies and to better understand the multifaceted relationship between psoriasis and cancer risk.

The article "Epidemiology of Psoriasis and Comorbid Diseases: A Narrative Review" by (Bu et al., 2022) provides a comprehensive examination of the association between psoriasis and cancer risk, highlighting critical findings from a systematic review and meta-analysis. The authors report an overall cancer prevalence of 4.78% among psoriasis patients, indicating a relative risk (RR) of 1.21 compared to the general population. This statistic underscores the heightened vulnerability of individuals with psoriasis to various malignancies, particularly keratinocyte cancer, lymphomas, lung cancer, bladder cancer, and melanoma.

A notable aspect of the study is the gender disparity in cancer risk, with women exhibiting a higher standardized incidence ratio than men. This finding invites further investigation into the underlying biological, environmental, or behavioral factors that may contribute to this discrepancy. The article also emphasizes the significant correlation between severe psoriasis and increased mortality risk from cancer, presenting an overall RR of 1.22. This association suggests that the severity of psoriasis may exacerbate the risk of developing fatal

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malignancies, raising concerns about the long-term health outcomes for patients with severe forms of the disease.

The authors delve into the implications of systemic treatments for psoriasis, noting that such interventions may elevate cancer risk. Specifically, they report increased hazard ratios (HR) for cancers of bone and cartilage, non-Hodgkin lymphoma, and non-melanoma skin cancer among patients undergoing systemic therapy. However, the article distinguishes between systemic treatments and biologics, finding no significant increase in cancer risk associated with biologic therapies. This distinction is crucial for clinicians when considering treatment options, as it suggests that biologics may offer a safer alternative for psoriasis management in terms of cancer risk.

Interestingly, the article asserts that the slightly elevated risk of cutaneous squamous cell carcinoma (SCC) is not directly linked to methotrexate treatment but is rather attributed to disease severity and ultraviolet exposure. This nuanced understanding highlights the importance of considering multiple factors when evaluating cancer risk in psoriasis patients.

Moreover, the article concludes that there are no significant differences in malignancy risk among various psoriasis treatments, and patients with psoriasis who develop cancer do not exhibit worse survival rates than those without psoriasis. This finding may alleviate some concerns regarding the impact of psoriasis on cancer prognosis, suggesting that psoriasis itself may not be a determinant of cancer outcomes.

CONCLUSION

The literature reviewed presents a multifaceted understanding of the association between psoriasis and the risk of developing or dying from cancer. The introduction establishes that chronic inflammation, inherent to psoriasis, interacts with treatment modalities and lifestyle factors, thereby influencing cancer risk. The subsequent sections of the review elaborate on various studies that explore this relationship from different angles.

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The foundational insights provided by (Beyaert et al., 2013) indicate that patients with severe psoriasis are at an increased risk for certain cancers, particularly lymphoma and non-melanoma skin cancer (NMSC). However, the authors emphasize the importance of controlling for confounding factors such as smoking and alcohol consumption, which can significantly alter the perceived risk. This notion is echoed by (Pietrzak et al., 2017), who further investigate gastrointestinal malignancies linked to psoriasis, reinforcing the idea that external lifestyle factors play a critical role in cancer risk.

The case study presented by (Morizane et al., 2018) raises concerns regarding the immunosuppressive nature of systemic treatments, suggesting that such therapies may compromise anti-cancer immunity. This highlights the delicate balance healthcare providers must maintain when treating psoriasis, particularly in patients who may already be at increased risk for cancer.

In their systematic review, (Wang et al., 2020) complicate the narrative by noting inconsistencies in the evidence linking psoriasis to NMSC. They advocate for a nuanced understanding of this relationship, particularly given the variations in treatment protocols and patient demographics. This call for a more refined perspective aligns with the broader implications discussed by (Butrón-Bris et al., 2021), who link chronic inflammation to a wider range of malignancies and underscore the psychological burden of psoriasis as a contributing factor to cancer risk.

Lastly, the comprehensive overview provided by (Bu et al., 2022) emphasizes the notable increase in cancer prevalence among psoriasis patients and highlights gender disparities in risk. The findings suggest that while systemic treatments may carry risks, the severity of psoriasis itself is a significant factor in cancer mortality.

In conclusion, the literature presents a complex relationship between psoriasis and cancer risk, shaped by disease severity, treatment modalities, and lifestyle factors. While there is evidence of an increased risk for certain malignancies, particularly skin cancers, it is essential to consider confounding variables and the multifactorial nature of this association. Ongoing research is

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critical to further delineate these relationships and inform clinical practices regarding the management of psoriasis in patients at risk for cancer.

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