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REVIEW ARTICLE

Association of Myocardial Infarction Among Cervical Cancer Patients

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ABSTRACT

Introduction: Increased risk of myocardial infarction has been validated for several cancers, but limited study evaluated this risk in cervical cancer patients. Our study aimed to evaluate the risk of myocardial infarction in cervical cancer patients.

Method: This study using systematic review that search using keyword myocardial infarction and cervical cancer in Google Scholar and PubMed.

Result: After final screening the author analyze 2 articles.

Conclusion: These study demonstrated cervical cancer patients had a higher risk of myocardial infarction than the general population, especially in younger patients. Most cancers were associated with an increased risk of MI during the first 6 months after diagnosis. MI risk was related to the presence of metastases. Cancer patients may need a more aggressive treatment of classical MI risk factors. Strategies to reduce this risk should be assessed.

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- Myocardial infarction
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INTRODUCTION

Cervical cancer remains an critical predominant dangerous infection in ladies with age-adjusted frequency of 26.2 per one hundred thousand individuals in Taiwan. The three fundamental strategies of treatment are surgery, radiotherapy, and chemotherapy. Radiotherapy encompasses a basic part within the essential administration of patients with cervical cancer. Be that as it may, conclusive treatment eventually comes up short in around 30% of cervical cancer patients [1]. Concurrent chemoradiotherapy is the standard treatment for patients with progressed cervical cancer which has way better survival than radiotherapy alone or chemotherapy alone [2]. In spite of the fact that the number of long-term survivors has risen and proceeds to raise, information on the late harmfulness of treatment remains constrained.

Radiation-induced vascular illness had been detailed. Jacobson et al. found a essentially expanded frequency of thromboembolism in patients with cervical cancer [3]. In expansion, Maduro, et al. [4] appeared an expanded chance for creating myocardial localized necrosis. Moreover, pelvic radiotherapy for cervical cancer influences menopause [5]. These comes about illustrate that radiotherapy-induced late complications can be not as it were nearby and but moreover systemic. Past considers have appeared that the chance of MI is expanded post-radiotherapy in breast and head and neck cancer patients [6]. In any case, constrained think about assessed this hazard in cervical cancer patients after radiotherapy. In this way, the point of this ponder was to assess the chance of MI in cervical cancer patients amid a 5-year follow-up after radio-therapy.

MEDICINE GROUP

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METHODS

This study using systematic review that search using keyword Heart failure and Covid-19 in Google Scholar, PubMed, and CrossRef. After final screening the author analyze 4 articles. As in methods, the author summarize 4 articles that mention in table 1.

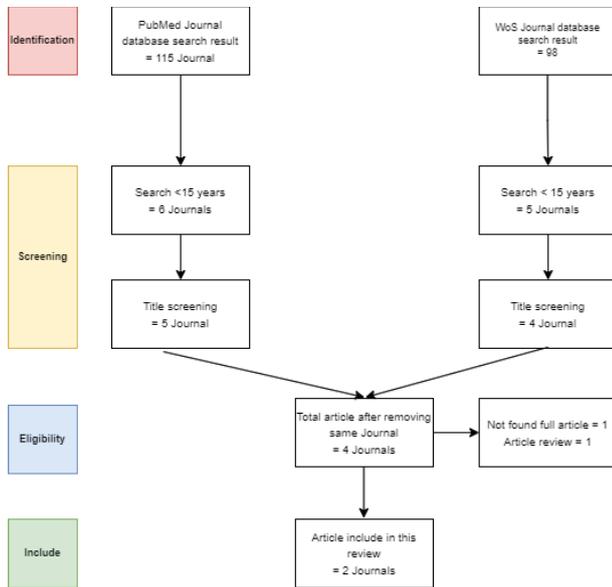


Diagram: Screening flow chart for systematic review.

DISCUSSION

Cervical cancer is an imperative wellbeing issue. In spite of the fact that its rate is diminishing, it remains the driving cause of passing from cancer in ladies in Taiwan. Radiotherapy is a fundamentally component of the standard treatment, especially treatment of bulky tumors and progressed organize malady. The outright survival good thing about platinum-based concurrent chemoradiation in locally progressed cervical cancer has been detailed to be 12% [2]. In spite of the fact that radiotherapy and chemotherapy may increment tumor control, they moreover increment nearby and systemic poisonous quality. A few examiners have specified the significance of recording therapy-related harmfulness. In any case, the information are restricted, especially the information on late impacts [10]. Our ponder illustrated that cervical cancer patients who gotten radiation treatment as part of their cancer medications had the next chance of VTE, AP, MI, and ischemic stroke compared with the common populace.

Affiliations of MI chance with treatment modalities in several cancers have as of late been detailed. Nilsson et al. detailed a factually noteworthy increment within the hazard of stroke in ladies with a history of breast cancer [6]. Dorresteijn et al. appeared that radiation to the neck was related with a 5.6 times expanded hazard of ischemic stroke after a middle follow up time of 7.8 a long time [11]. Julio,

Table 1: Summarize association MI among Ca cervix patients.

Author	Origin	Method	Sample Size and Population	Period	Result	Outcome
John H Maduro	Netherlands	Retrospective study	Total sample are 277	Between 1989 and 2002	In 277 patients with a middle follow-up of 4.5 a long time (run, 0.1-17 a long time) and a middle survival of 9.2 a long time, 27 cardiac occasions happened. The 5-, 10-, and 15 year actuarial frequency of any cardiac occasion were 9, 14, and 16%, individually. For the total populace, the SIR for MI was lifted (2.05, 95% CI: 1.12-3.43). The radiotherapy gather (n = 132) was more seasoned and had more cardiovascular chance variables than the chemoradiation bunch (n = 145). The SIR for MI within the radiotherapy gather was 2.88 (95% CI: 1.44-5.15) and within the chemoradiation bunch 1.00 (95% CI: 0.21-7.47). In multivariate investigations, there was no connection between treatment methodology and the hazard for MI.	In this cohort of cervical cancer patients, an expanded hazard for creating a MI was watched. This expanded hazard of MI, in combination with the tall predominance of cardiovascular hazard components in cervical cancer patients, inclinations the have to be investigate methodologies to diminish their hazard for cardiovascular dreariness.
Chen-Hsi Hsieh	Taiwan	Retrospective study	The assessed number of patients with cervical cancer with radiotherapy only, surgery with bilateral oophorectomy only, and with appendectomy were 308, 323 and 229 respectively.	From the 1996 to 2010	The balanced risk proportion for cervical cancer in patients with MI was 1.97 (95% CI, 0.97 - 3.91; p = 0.05) for the bunch that gotten RT alone, and 2.13 (95% CI, 1.11 - 3.75; p = 0.01) for the surgery gather when compared with controls. The more hazard comorbidities they have, the higher the chance of myocardial dead tissue would be for the patients.	The rate of MI was altogether higher among cervical cancer patients with RT alone or surgery with two-sided oophorectomy alone than among common populaces. RT may well be as a figure to extend chance as two-sided oophorectomy. Whether RT itself triggers menopause or impairs the ovarian hormone generation that increments the hazard of MI has to be encourage explored.

et al. [12] detailed the afterward improvement of spread intravascular coagulation-mediated cerebral localized necrosis in a persistent with cervical cancer. In any case, there have been no population-based reports regarding the relationship of MI and cervical cancer. This is often the primary huge ponder to gauge the frequency of MI in cervical cancer patients treated with radiotherapy.

Radiotherapy in cervical cancer patients not as it were has nearby but moreover systemic late impacts. Vascular harms initiated by radiation have been much explored. Radiation seem actuate vascular harm specifically additionally result in different sorts of utilitarian harm. The impacts incorporate degeneration of endothelium, diminish in intimal thickness, part of the cellar film, lipid stores, adventitial fibrosis, and impediment [13]. In expansion, ovarian is exceptionally radiation-sensitive organ. Ovarian inadequate caused by pelvic radiation has been well known [14]. Ovarian lacking incorporates a huge impact on the wellbeing of ladies, in specific impacts on bone thickness, and on cardiovascular and neuro-logical frameworks [15].

Moreover, menopause, a sign of ovarian lacking, has been detailed as a chance calculate for MI since of its potential for expanding blood weight, weight, affront resistance, and quickened changes of lipids and lipoproteins [16,17]. All of these impacts may lead to the advancement of vascular occasions. In this cohort ponder, expanded dangers for creating AP, MI, and ischemic stroke were watched. The cruel age of ladies at menopause in our nation is 50 to 51 a long time ancient [18]. To characterize clearly clarify the systemic impact of menopause, patients were partitioned into ≥ 51 a long time and < 51 a long time age bunches. Interests, more youthful patients had 1.4, 3.4, and 2 times the chance of AP, MI, and ischemic stroke occasions, individually, compared with more seasoned patients. In expansion, there were no altogether distinctive vascular occasions between surgery alone with oophorectomy and cervical cancer patients who gotten radiotherapy as a portion of their treatment.

These comes about assume that radiotherapy in cervical cancer not as it were has nearby but moreover systemic impacts, particularly in more youthful patients. We assumed that ovarian lacking plays an imperative part within the advancement of these vascular maladies, particularly in MI. As of late, Net, et al. [19] detailed the surgical procedure of ovarian transposition (moving the ovaries absent from the field of light) minimizes the radiation dosage and harm to the ovary. In expansion, in spite of the fact that the "timing hypothesis" holds that estrogens have useful impacts on youthful and sound blood vessels of ladies, direct evidence showing the good thing about substitution treatment is rare [20]. Hormone substitution treatment or transposition of ovaries some time recently radiotherapy ought to be considered as portion of a multidisciplinary approach, particularly in more youthful patients. Be that as it may, these comes about and recommendations require advance examination.

Compared with the common populace, cancer patients are frequently watched to have lower financial status [21,22]. This has hence been related with a better predominance of comorbidities, such as diabetes mellitus, hypertension, or hyperlipidemia. These components worsen vascular malady. In our think about, five MI-related chance components were utilized to stratify the cancer patients into three bunches (moo-, halfway-, and high-risk bunches). The 5-year MI frequency was lower within the moo chance gather, 4%, than within the middle of the road chance, 9%, and tall hazard bunches, 15%. Patients with more comorbidity had higher hazard of MI. Hence, intercessions pointed at stroke anticipation are greatly vital. Total overview of modifiable hazard variables and seriously way of life adjustment are shown in patients with numerous comorbidities. Assist thinks about are suggested to decide the part of medicines utilized in essential avoidance of MI [23].

A few confinements of this consider ought to be said. To begin with, hospitalized or outpatients with a vital determination of cervical cancer were chosen to dodge consideration of patients with misdiagnosed cervical cancer, in spite of the fact that a few patients may have been missed. Moment, in our multivariate examination, increment within the frequency of stroke or any other vascular occasions was irrelevant to the expansion of platinum-based chemotherapy to radiotherapy. The moderately little estimate of the census populaces and the moderately brief follow-up period likely prevented the examination, but we have found the noteworthy diverse MI rate in these two cohorts in this brief period. Third, there is no information on clinical characteristics, counting arranging, MI seriousness, and biochemical information or other data, like tobacco utilize, dietary propensities, body mass file, and action level (ECOG) for advance investigation. Smoking is the vital figure for cervical cancer and vascular occasions like MI.

CONCLUSSION

In this review study, the risk of Myocardial Infarction (MI) was significantly higher in cervical cancer patients who received radiation therapy as part of their cancer treatments, especially in younger patients. Strategies to reduce these risks need to be further examined..

CONFLICTS OF INTEREST

The author declares no conflict of interest. The funding sponsors had no role in the writing of the manuscript and in the decision to publish it.

REFERENCES

1. Tsai CS, Lai CH, Wang CC, Chang JT, Chang TC, Tseng CJ, Hong JH. The prognostic factors for patients with early cervical cancer treated by radical hysterectomy and postoperative radiotherapy. *Gynecol Oncol.* 1999 Dec;75(3):328-33. doi: 10.1006/gyno.1999.5527. PMID: 10600284.
2. Green JA, Kirwan JM, Tierney JF, Symonds P, Fresco L, Collingwood M, Williams CJ. Survival and recurrence after concomitant chemotherapy and radiotherapy for

- cancer of the uterine cervix: a systematic review and meta-analysis. *Lancet*. 2001 Sep 8;358(9284):781-6. doi: 10.1016/S0140-6736(01)05965-7. PMID: 11564482.
3. Jacobson G, Lampli J, Zamba G, Hua L, Goodheart MJ. Thromboembolic events in patients with cervical carcinoma: Incidence and effect on survival. *Gynecol Oncol*. 2009 May;113(2):240-4. doi: 10.1016/j.ygyno.2009.01.021. Epub 2009 Feb 28. PMID: 19251310.
 4. Maduro JH, den Dekker HA, Pras E, de Vries EG, van der Zee AG, Klokman WJ, Reyners AK, van Leeuwen FE, Langendijk JA, de Bock GH, Gietema JA. Cardiovascular morbidity after radiotherapy or chemoradiation in patients with cervical cancer. *Int J Radiat Oncol Biol Phys*. 2010 Dec 1;78(5):1337-44. doi: 10.1016/j.ijrobp.2009.09.061. Epub 2010 Mar 29. PMID: 20350792.
 5. Al-Badawi IA, Al-Aker M, AlSubhi J, Salem H, Abduljabbar A, Balaraj K, Munkarah A. Laparoscopic ovarian transposition before pelvic irradiation: a Saudi tertiary center experience. *Int J Gynecol Cancer*. 2010 Aug;20(6):1082-6. doi: 10.1111/IGC.0b013e3181e2ace5. PMID: 20683422.
 6. Nilsson G, Holmberg L, Garmo H, Terent A, Blomqvist C. Increased incidence of stroke in women with breast cancer. *Eur J Cancer*. 2005 Feb;41(3):423-9. doi: 10.1016/j.ejca.2004.11.013. PMID: 15691643.
 7. Lin HC, Tsai SY, Lee HC. Increased risk of developing stroke among patients with bipolar disorder after an acute mood episode: a six-year follow-up study. *J Affect Disord*. 2007 Jun;100(1-3):49-54. doi: 10.1016/j.jad.2006.09.016. Epub 2006 Oct 23. PMID: 17059847.
 8. Chen CY, Liu CY, Su WC, Huang SL, Lin KM. Factors associated with the diagnosis of neurodevelopmental disorders: a population-based longitudinal study. *Pediatrics*. 2007 Feb;119(2):e435-43. doi: 10.1542/peds.2006-1477. PMID: 17272605.
 9. McFadden E, Luben R, Wareham N, Bingham S, Khaw KT. Social class, risk factors, and stroke incidence in men and women: a prospective study in the European prospective investigation into cancer in Norfolk cohort. *Stroke*. 2009 Apr;40(4):1070-7. doi: 10.1161/STROKEAHA.108.533414. Epub 2009 Feb 19. PMID: 19228844.
 10. Kirwan JM, Symonds P, Green JA, Tierney J, Collingwood M, Williams CJ. A systematic review of acute and late toxicity of concomitant chemoradiation for cervical cancer. *Radiother Oncol*. 2003 Sep;68(3):217-26. doi: 10.1016/s0167-8140(03)00197-x. PMID: 13129628.
 11. Dorresteijn LD, Kappelle AC, Boogerd W, Klokman WJ, Balm AJ, Keus RB, van Leeuwen FE, Bartelink H. Increased risk of ischemic stroke after radiotherapy on the neck in patients younger than 60 years. *J Clin Oncol*. 2002 Jan 1;20(1):282-8. doi: 10.1200/JCO.2002.20.1.282. PMID: 11773180.
 12. Chalela JA, Raps EC, Kasner SE. Disseminated intravascular coagulation and stroke associated with cervical cancer. *J Stroke Cerebrovasc Dis*. 1999 Sep-Oct;8(5):355-7. doi: 10.1016/s1052-3057(99)80012-3. PMID: 17895187.
 13. Silverberg GD, Britt RH, Goffinet DR. Radiation-induced carotid artery disease. *Cancer*. 1978 Jan;41(1):130-7. doi: 10.1002/1097-0142(197801)41:1<130::aid-cnrcr2820410121>3.0.co;2-x. PMID: 626923.
 14. Meirou D, Nugent D. The effects of radiotherapy and chemotherapy on female reproduction. *Hum Reprod Update*. 2001 Nov-Dec;7(6):535-43. doi: 10.1093/humupd/7.6.535. PMID: 11727861.
 15. De Vos M, Devroey P, Fauser BC. Primary ovarian insufficiency. *Lancet*. 2010 Sep 11;376(9744):911-21. doi: 10.1016/S0140-6736(10)60355-8. Epub 2010 Aug 11. PMID: 20708256.
 16. Bushnell CD. Stroke in women: risk and prevention throughout the lifespan. *Neurol Clin*. 2008 Nov;26(4):1161-76, xi. doi: 10.1016/j.ncl.2008.05.009. PMID: 19026906; PMCID: PMC2634299.
 17. Cheung LP, Pang MW, Lam CW, Tomlinson B, Chung TK, Haines CJ. Acute effects of a surgical menopause on serum concentrations of lipoprotein(a). *Climacteric*. 1998 Mar;1(1):33-41. doi: 10.3109/13697139809080679. PMID: 11907924.
 18. Boulet MJ, Oddens BJ, Lehert P, Vemer HM, Visser A. Climacteric and menopause in seven south-east Asian countries. *Maturitas*. 2008 Sep-Oct;61(1-2):34-53. doi: 10.1016/j.maturitas.2008.09.008. PMID: 19434878.
 19. Gross E, Champetier C, Pointreau Y, Zaccariotto A, Dubergé T, Guerder C, Ortholan C, Chauvet B. Tolérance à l'irradiation des tissus sains: les ovaires [Normal tissue tolerance to external beam radiation therapy: ovaries]. *Cancer Radiother*. 2010 Jul;14(4-5):373-5. French. doi: 10.1016/j.canrad.2010.01.011. Epub 2010 Apr 28. PMID: 20430663.
 20. Goldstein LB, Bushnell CD, Adams RJ, Appel LJ, Braun LT, Chaturvedi S, Creager MA, Culebras A, Eckel RH, Hart RG, Hinchey JA, Howard VJ, Jauch EC, Levine SR, Meschia JF, Moore WS, Nixon JV, Pearson TA; American Heart Association Stroke Council; Council on Cardiovascular Nursing; Council on Epidemiology and Prevention; Council for High Blood Pressure Research; Council on Peripheral Vascular Disease, and Interdisciplinary Council on Quality of Care and Outcomes Research. Guidelines for the primary prevention of stroke: a guideline for healthcare professionals from the American Heart Association/American Stroke Association. *Stroke*. 2011 Feb;42(2):517-84. doi: 10.1161/STR.0b013e3181fcb238. Epub 2010 Dec 2. Erratum in: *Stroke*. 2011 Feb;42(2):e26. PMID: 21127304.
 21. van der Aa MA, Siesling S, Louwman MW, Visser O, Pukkala E, Coebergh JW. Geographical relationships between sociodemographic factors and incidence of cervical cancer in the Netherlands 1989-2003. *Eur J Cancer Prev*. 2008 Oct;17(5):453-9. doi: 10.1097/CEJ.0b013e3282f75ed0. PMID: 18714188.
 22. Tsai HT, Tsai YM, Yang SF, Wu KY, Chuang HY, Wu TN, Ho CK, Lin CC, Kuo YS, Wu MT. Lifetime cigarette smoke and second-hand smoke and cervical intraepithelial neoplasm—a community-based case-control study. *Gynecol Oncol*. 2007 Apr;105(1):181-8. doi: 10.1016/j.ygyno.2006.11.012. Epub 2007 Jan 3. PMID: 17204311.
 23. Tsai HT, Tsai YM, Yang SF, Wu KY, Chuang HY, Wu TN, Ho CK, Lin CC, Kuo YS, Wu MT. Lifetime cigarette smoke and second-hand smoke and cervical intraepithelial neoplasm—a community-based case-control study. *Gynecol Oncol*. 2007 Apr;105(1):181-8. doi: 10.1016/j.ygyno.2006.11.012. Epub 2007 Jan 3. PMID: 17204311.

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