Breast Cancer-Related Lymphedema in Black Women: A Narrative Review

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Background

One in five breast cancer survivors will develop breast cancer-related lymphedema (BCRL).[1] BCRL is a financially burdensome and debilitating.[2] Black women are disproportionately impacted by BCRL. While there is literature that outlines the role of surgical technique in breast cancer related lymphedema incidence, there is a paucity of information on the impact of these factors on the prevalence of BCRL in black women.

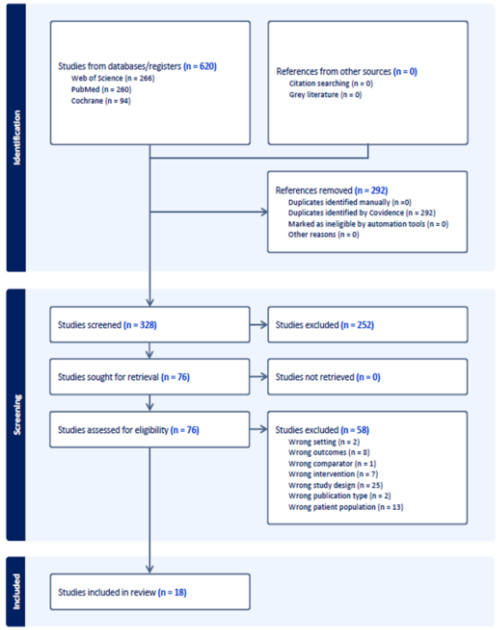
Research Objectives

We investigated the role of axillary surgery, adjuvant therapy, comorbid status, and socioeconomic status in BCRL among black breast cancer survivors.

Methods

A literature search for published, full-text articles was performed using PubMed, Web of Science, and Cochrane. Primary research from peer-reviewed journals that targeted patients with lymphedema post nodal dissection and BCRL with outcomes stratified by race were prioritized. Following a thorough title and abstract review and full text screening was performed using Covidence; 18 full articles were included.

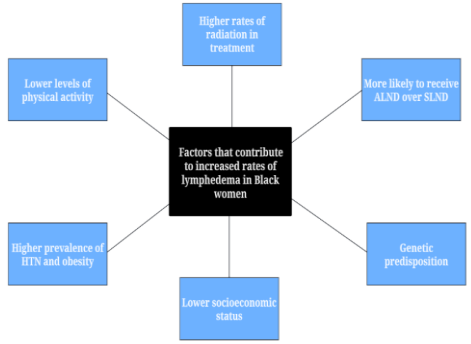
Figure 1. PRISMA



Results

One study of 2,953 breast cancer (BC) survivors reported a two-fold increased risk of BCRL in black women compared to white women (p <0.05).[3] Obesity, hypertension, chemotherapy, and higher rates of ALND (p= 0.03) amongst black women are significantly associated with the development of BCRL. [4-9] A retrospective study of 31,000 nonmetastatic, node-negative BC survivors reported that black women were 12.3% less likely to receive SLNB and significantly more likely to receive ALND compared to white women (p= <0 .001).[4] The association between radiation therapy and increased risk of BCRL has been reported. [5-9] One study found a 5-fold increase in the incidence of lymphedema in patients who underwent ALND combined with radiation therapy compared to patients who underwent ALND alone.[9] A prospective study of 166 BC survivors found that black women were significantly more likely to receive radiation therapy as a part of their breast cancer treatment (p= 0.03) and 2-times more likely to experience symptomatic cording after BC treatment compared to non-black women (p=0.013). [10] Black women are twice as likely to experience upper extremity disability after BC treatment compared to non-black women (p=0.013; p <0.01).[10-13]

Figure 2. Summary graphic displaying major factors considered in the review of lymphedema in Black women.



Conclusions

- Although the biological underpinnings associated with the increased incidence of BCRL in black women remain to be elucidated, radiation therapy and SLNB use contributes to increased incidence of BCRL in black women.
- More clinical trials are needed to determine whether treatment of modifiable risk factors and the use of lymphatic reconstructive microsurgical techniques could mitigate BCRL in this patient population.

References

1.Levy EW, Pfalzer LA, Danoff J, Springer BA, McGarvey C, Shieh CY, Morehead-Gee A, Gerber LH, Stout NL. Predictors of functional shoulder recovery at 1 and 12 months after breast cancer surgery. Breast Cancer Res Treat. 2012 Jul;134(1):315-24.
2.DiSipio T, Rye S, Newman B, Hayes S. Incidence of unilateral arm lymphoedema after breast cancer: a systematic review and meta-analysis. Lancet Oncol. 2013 May;14(6):500-15. doi: 10.1016/S1470-2045(13)70076-7. Epub 2013 Mar 27.
3.Mayrovitz HN. Measuring Breast Cancer-Related Lymphedema. In: Mayrovitz HN, editor. Breast Cancer [Internet]. Brisbane (AU): Exon Publications; 2022 Aug 6. Ch. 5.
4.McLaughlin SA, Brunelle CL, Taghian A. Breast Cancer-Related Lymphedema: Risk Factors, Screening, Management, and the Impact of Locoregional Treatment. J Clin Oncol. 2020 Jul 10;38(20):2341-2350.
5.Bundred N, Foden P, Todd C, Morris J, Watterson D, Purushotham A, Bramley M, Riches K, Hodgkiss T, Evans A, Skene A, Keeley V; Investigators of BEA/PLACE studies. Increases in arm volume predict lymphoedema and quality of life deficits after axillary surgery: a prospective cohort study. Br J Cancer. 2020 Jul;123(1):17-25.
6.Basta MN, Wu LC, Kanchwala SK, Serletti JM, Tchou JC, Kovach SJ, Fosnot J, Fischer JP. Reliable prediction of postmastectomy lymphedema: The Risk Assessment Tool Evaluating Lymphedema. Am J Surg. 2017 Jun;213(6):1125-1133.e1.
7.Banks E, Byles JE, Gibson RE, Rodgers B, Latz IK, Robinson IA, Williamson AB, Jorm LR. Is psychological distress in people living with cancer related to the fact of diagnosis, current treatment or level of disability? Findings from a large Australian study. Med J Aust. 2010 Sep 6;193(S5):S62-7.
8.Chachaj A, Małyszczak K, Pyszel K, Lukas J, Tarkowski R, Pudełko M et al (2010) Physical and psychological impairments of women with upper limb lymphedema following breast cancer treatment. Psychooncology 19:299–305.
9.Vassard D, Olsen MH, Zinckernagel L, Vibe-Petersen J, Dalton SO, Johansen C (2010) Psychological consequences of lymphoedema associated with breast cancer: a prospective cohort study. Eur J Cancer 46:3211–3218.
10.Khan F, Amatya B, Pallant JF, Rajapaksa I (2012) Factors associated with long-term functional outcomes and psychological sequelae in women after breast cancer. Breast 21:314–320.
11.Kwan ML, Darbinian J, Schmitz KH, Citron R, Partee P, Kutner SE, Kushi LH. Risk factors for lymphedema in a prospective breast cancer survivorship study: the Pathways Study. Arch Surg. 2010 Nov;145(11):1055-63.
12.Dean LT, DeMichele A, LeBlanc M, Stephens-Shields A, Li SQ, Colameco C, Coursey M, Mao JJ. Black breast cancer survivors experience greater upper extremity disability. Breast Cancer Res Treat. 2015 Nov;154(1):117-25.

13.Eversley R, Estrin D, Dibble S, Wardlaw L, Pedrosa M, Favila-Penney W. Post-treatment symptoms among ethnic minority breast cancer survivors. Oncol Nurs Forum. 2005 Mar 5;32(2):250-6.

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