Epidemiology description, treatment patterns, resource utilization, and biomarker testing of metastatic triple-negative breast cancer patients in Costa Rica

Rosado-Buzzo AA[1]; García-Mollinedo ML[1]; Urrego-Reyes J[2]; Beltran C[2]; Chacin N[2]; Rendon AM[3]

[1]Links & Links, Mexico City, Mexico; [2]MSD Colombia, Bogota, Colombia; [3]MSD CENCA, Panama City, Panama

Introduction

Breast cancer (BC) is the most diagnosed malignancy and the second-leading cause of cancer death in women in America. Triple-negative breast cancer (TNBC), which is phenotypically defined by lack of estrogen receptor (ER) and progesterone receptor expression and the absence of human epidermal growth factor receptor-2 (HER2) overexpression and/or amplification, accounts for approximately 15%-20% of all breast cancers. TNBC is associated with younger age and more advanced tumor stage at diagnosis and is also associated with a higher risk of disease recurrence and higher recurrence in viscera within 5 years of diagnosis.[1-3]

Objective

This research aims to explore metastatic (stage IV) TNBC epidemiology, clinical data, biomarker use, anticancer therapy, healthcare resource utilization (HCRU), cost of health care, and local burden of disease (LBD) in the adult female population within the Costa Rican public health sector.

Methods

Observational, descriptive, population-based registry study. Study population was women with metastatic TNBC diagnosed during 2019. Data from Costa Rican public health system official and available sources (ICD-10 C50 encoded records from National Registry of Tumors and National Social Security Fund), as well as local review of the medical literature, were used to estimate metastatic TNBC epidemiology, clinical profile, HCRU, costs of treatments, and healthcare tariff. A Delphi Panel of physicians was developed to build the processes of diagnosis, health care, and specific treatments of metastatic TNBC. Finally, cost analysis and estimation of the LBD in the Costa Rican National Social Security Fund were performed. The Burden of Disease was estimated with proper public standard local data, using WHO´s method and available specific and actualized values of YLL, YDL and DALY for BC in Costa Rica (GBD, WHO, 2018), assumed to be a proxy for TNBC. Data and values were from 2019.

Presented at ISPOR 2023; Boston, MA, USA; May 7-10, 2023.

Results

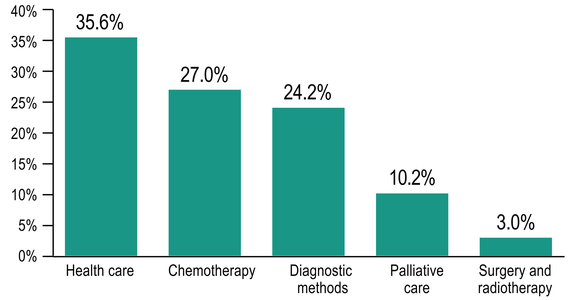
In 2019, there were 284 incident cases of TNBC (18.38% of total breast cancer), where 27.5% (n=78 cases) were in women <50 years of age. Stage IV represented 8.94% (n=25) of total incident TNBC. Deaths in stage IV represented 30.9% (n=21) of total/all TNBC mortality (n=68) (**Table 1**). Determination of HR and HER2 was carried out in >90% of cases (n=25 cases). In stage IV TNBC, surgery is a little- or moderately used resource (35.5%, 95% CI 12.1-55.0), basically for palliative purposes. Metastatic stage treatment was anthracyclines as monotherapy (25%), anthracyclines + taxanes (25%), and taxanes only (40%); other therapies were used in ≤10%.

Table 1. Metastatic TNBC. Demographic, epidemiological, and clinical data, Costa Rica, 2019

Triple-negative breast cancer	Stage IV
Median age at diagnosis	52 yr (27 – 88)
Five-year prevalence 2019	33 cases
Local recurrence	11.8%
Distant recurrence	9.7%
Five-year OS 2019	5.02%

Regarding efficiency in the medical care of patients with stage IV TNBC, close to 63% of HCRU corresponds to health care + chemotherapy, with which a very poor outcome is achieved (1-year OS of 8.37% and 5-year OS of 5.02%) (**Figure 1**).

Figure 1. Healthcare resource utilization (HCRU) for stage IV medical attention. Share by component, Costa Rica, 2019



The burden of disease is significant, both individually and in the aggregation of incident cases. The high early mortality of stage IV vs the average for TNBC leads to a DALY differential that is also notorious between metastatic disease (31.63) and the average for TNBC (8.91). This correlates with high costs of care vs the average. Two easily identifiable situations are related to this: The need for earlier diagnosis, and access to innovative therapies that show better outcomes in OS for mTNBC patients (**Table 2**).

Table 2. Burden of disease. TNBC in Costa Rica, focus on stage IV, 2019

Burden of disease measures	Stage IV
YLL (years of life lost)	764.99
YLD (years of life with disability)	25.78
DALY (disability-adjusted life years)	790.77
DALYs per incidence	31.63
Case cost per stage 2019 (direct medical, USD)	17,314
Cost per DALY 2019 (USD)	158,942
Total yearly cost (social + direct medical 2019) per case (USD)	176,256
Total yearly cost (social + direct medical 2019) incidence (USD)	4,406,394

Discussion

The impact of this study lies in the fact that it offers a broad vision of metastatic TNBC in Costa Rica with local data, since it considers demo-epidemiological information, clinical presentation, diagnostic methodology used, prescribed medical treatment, and burden of disease. This makes it possible to highlight that both diagnostic methodology and therapeutic management continue to be very conservative, since the biomarkers that allow a fine diagnosis are practically never determined. Simultaneously, it is appreciated that cancer treatment is concentrated in the most traditional regimens of chemotherapy, without using innovative treatments that offer more promising outcomes for patients. All this is relevant given the poor prognosis of metastatic TNBC. The 5-year OS in the US is 12%,4 compared to 5% in Costa Rica. Likewise, the DALYs per case of stage IV (31.63) are significantly higher than the TNBC average (8.91).

Conclusion

Access to currently approved treatments, such as checkpoint inhibitors, will outline a strategy that is aimed to improve epidemiological and burden outcomes. In the health system, this approach enables the rationality of health expenditures, especially when considering that the social security fund attends to about 95% of cases. Study findings are similar to other public health systems in the region. The main difference laid in health care settings where access to new therapies are up-to-date. The relevance of this study demonstrates the lack of comprehensive data for metastatic TNBC at the Central American regional.

References

1. Siegel R, et al. *CA Cancer J Clin.* 2014;64(1):9-29.
2. Dent R, et al. *Clin Cancer Res.* 2007;13(15 Pt 1):4429-4434.
3. Bauer KR, et al. *Cancer.* 2007;109(9):1721-1728.
4. National Cancer Institute. Surveillance, Epidemiology, and End Results Program (SEER). Cancer Stat Facts: Female Breast Cancer Subtypes. Available from: *https://seer.cancer.gov/statfacts/html/breast-subtypes.html.* Accessed February 12, 2021.
5. Ministerio de Salud. Costa Rica. Estadística de Cáncer - Registro Nacional Tumores [Internet]. Ministerio de salud.go.cr. Available from: *https://apps01n.ministeriodesalud.go.cr/SINAVISWEB/index.do.* Accessed August 20, 2020.

Disclosure

This study was funded by MSD Colombia, a subsidiary of Merck & Co., Inc., Rahway, NJ, USA. Juan Urrego-Reyes, Claudia Beltran, Nina Chacin, and Ana Marisol Rendon are MSD Colombia employees.