PS4-12-23: Regional Variability and Healthcare Disparities in the Management of Early-onset Breast Cancer in Peru

I. Otoya[1], N. Valdiviezo[1], C. Calle[1], Z. Morante[1], T. Vidaurre[1], S. Lozano[2], G. Valencia[3], M. Valdivia[4], L. Sanchez[5], J. Moreno[6], C. Castañeda[1], V. Acuña[7], S. Neciosup[1]

[1]Oncología Médica, Instituto Nacional de Enfermedades Neoplásicas, Lima, Perú, [2]Hospital Regional Lambayeque, Perú, [3]Hospital Antonio Lorena, Cusco, Perú, [4]Hospital Goyeneche, Arequipa, Perú, [5]Hospital Santa Rosa, Piura, Perú, [6]Instituto Regional de Enfermedades Neoplásicas, La Libertad, Perú, [7]Facultad de Farmacia y Bioquímica, Universidad Nacional Mayor de San Marcos, Lima, Perú.

Background

Breast cancer is the most frequent malignancy among women in Peru, with about 7,800 new cases and nearly 2,000 deaths annually (GLOBOCAN 2022). The National Cancer Institute (INEN) in Lima receives around 1,200 new cases each year, reflecting the high burden concentrated in the capital. Early-onset breast cancer (≤45 years) poses a particular clinical challenge due to its association with more aggressive behavior and poorer prognosis. Although international evidence suggests that clinical presentation may vary by population and geography, data on regional differences within Peru remain scarce.

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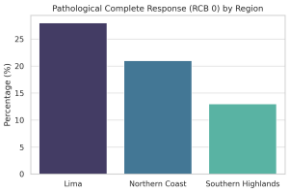
Methods and Materials

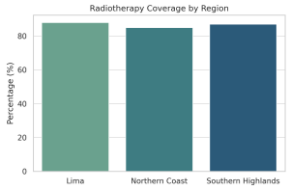
Objective: To analyze regional differences in the distribution of early-onset breast cancer subtypes in Peru, including the incidence of Luminal A, Luminal B, HER2+, and triple-negative tumors, along with associated clinicopathological features and treatment response. This observational, cross-sectional, multicenter study included women aged ≤45 years with stage II-III breast cancer diagnosed between 2021 and 2023, all of whom received neoadjuvant therapy, across three Peruvian macro-regions: Lima, the Northern Coast, and the Southern Highlands. The sampling design was based on the regional epidemiological burden and operational capacity of participating centers, allocating 92 patients to Lima (≈60%), 34 to the Northern Coast (22.7%), and 23 to the Southern Highlands (15.3%). The sample size ensured 80% statistical power (α=0.05) to detect ≥20% differences in the most frequent subtypes, with Fisher's exact test applied to comparisons with small frequencies to ensure robust interregional analyses.

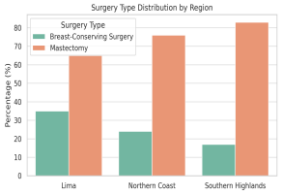
Results

Table 1. Clinicopathologic characteristics of young women (≤45 years) with breast cancer in Peru

Variable	Lima (n = 18)	Northern Coast (n = 33) (n = 33)	Southern HighLands (n = 23) (n = 148)
Median Age (years)	39 (85%)	41 (27.3%)	38 (50.8%)
Advanced Stage III	69 (85%)	6 (267.6%)	19 (63.5%)
Histologic Type			
Invasive ductal car.	82 (88%)	29 (87.9%)	20 (30%)
Other types	11 (12%)	4 (12%)	3 (20%)
Tumor Grade III (high)			
Luminal A	28 (30%)	6 (24%)	1 (47%)
Luminal B	38 (42%)	10 (31%)	5 (22%)
HER2+	20 (22%)	12 (35%)	4 (17%)
Triple Negative	22 (23%)	5 (16%)	11 (43%)
Pathologic Complete Response	28 (28%)	8 (21%)	3 (13%)
Surgery	33 (35%)	6 (18%)	3 (13%)
Mastectomy	60 (65%)	27 (82%)	107 (71%)







Discussion

A total of 149 women with early-onset breast cancer were analyzed across three Peruvian macro-regions: Lima (93; 62.4%), Northern Coast (33; 22.1%), and Southern Highlands (23; 15.4%). Median age at diagnosis was 39, 41, and 38 years respectively, showing a homogeneous pattern with slight regional variation.

Stages II-III predominated, with a higher proportion of advanced cases in the Southern Highlands (~65%). Invasive ductal carcinoma was the main histology (>85%), while high-grade tumors were more frequent in the Southern Highlands (~47%). Molecular subtype distribution varied: Luminal B was predominant in Lima (~42%), HER2+ in the Northern Coast (~36%), and triple-negative in the Southern Highlands (~26%). Pathological complete response (RCB 0) was highest in Lima (~28%), intermediate in the Northern Coast (~21%), and lowest in the Southern Highlands (~13%). Breast-conserving surgery was more common in Lima (~35%), while mastectomy predominated in the Northern Coast and Southern Highlands (>70%). Radiotherapy coverage was uniform across regions (>85%).

Conclusions

- ☆ These findings reveal regional differences in early-onset breast cancer across Peru, likely influenced by inequities in access to specialized care and treatment standardization.
- ☆ This highlights the need for strategies to improve early diagnosis and harmonize management to achieve better outcomes.
- ☆ Larger studies with more representative samples and reduced bias are required to better reflect the national reality.

Contact
Iris Otoya, MD
Medical Oncology, Instituto Nacional de Enfermedades Neoplásicas, Lima, Perú
Email: iris.otoyaf@gmail.com
Phone: +51979580270

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