Resources for the attention of patients with breast cancer in Mexico

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Abstract

Multicenter studies on breast cancer require inter-institutional collaboration, resources and specialized personnel. In Mexico, many institutions provide these services, but their information is not accessible; to mitigate it, the Mexican Society of Oncology formed the Mexican Cooperative Research Groups in Oncology. **Objective:** To describe the infrastructure, personnel and activities of hospitals with care of patients with breast cancer in Mexico. **Methods:** A survey was conducted to 30 breast cancer specialists about resources and services of their institutions. **Results:** 13 (43.3%) specialists answered the survey, 38.5% of Seguro Popular, 23.1% of Instituto Mexicano del Seguro Social, and 38.4% of other institutions, with a median of 300 (50-950) new cases per year. All the institutions have oncological surgery, breast radiology, palliative care, pathology, nutrition and multidisciplinary sessions. All have ultrasound with breast transducer, 92.3% digital mammography, and 53.8% tomosynthesis and/or magnetic resonance. They do sentinel lymph node detection with dye (92.3%) or radionuclide (61.5%). Tamoxifen, aromatase inhibitors and trastuzumab are available in 92.3%, and other target therapies in < 40%. Genetic signatures are done in 21.3% and 61.5% analysis of hereditary cancer. **Conclusions:** The institutional capacity to participate in multicenter studies is heterogeneous; the few resources in several institutions limit their inclusion to studies of breast cancer.

Key words: Infrastructure. Services. Quality of attention. Breast cancer. Mexico.

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Introduction

Breast cancer is the most common neoplasm and with the highest mortality in women worldwide; 2012 estimates revealed a global incidence of 1.67 million new cases and 522,000 deaths associated with this disease¹. In Mexico, 6,273 breast cancer deaths were recorded in women in 2015, which accounted for 14.3% of total deaths in females that year in our country².

The factors with the highest impact on the survival of patients with this important disease are timely detection, clinical stage and optimal treatment^{3,4}. In developed countries, 5-year survival can be as high as 80%, while in developing countries, it is not higher than 40%⁵.

The Mexican Society of Oncology (SMeO – *Sociedad Mexicana de Oncología, A.C.*) is an association that groups together specialists in the diagnosis, treatment and prevention of cancer in Mexico. Its goals include the promotion of applied research in a coordinated, inter-institutional and multidisciplinary way, with this task concurring with some aspects of the inter-institutional proposal of the National Plan for Cancer Control⁶. To this aim, SMeO created the Mexican Cooperative Research Groups in Oncology (GCIMO – *Grupos Cooperativos de Investigación de México en Oncología*) for several subspecialties, including breast cancer (GCIMO-M). The present study is a result of the GCIMO-M collaborative work. It is about a survey by means of which a situational diagnosis of the characteristics and resources of 13 centers specialized in the care of patients with breast cancer in Mexico, with the purpose to know the potential of each institution to be included in research projects according to the requirements of each research protocol.

Material and methods

Between March 2017 and February 2018, a cross-sectional, descriptive, observational study was carried out by means of a 68-question survey, which was electronically distributed to breast cancer specialists from institutions that treat patients with this pathology in Mexico, who provided the requested information and answered by the same route. In order to be included in the study, the surveyed subjects had to be SMeO active members and agree to participate.

The questions included collected general information on the respondent, and explored the characteristics of the institution where he/she works, in particular regarding the resources available for the care of patients with breast cancer, which were grouped as follows:

- Characteristics of care at the institution.
- Human resources, services and equipment for diagnosis and care.
- Targeted and hormone therapies.
- Activities related to therapeutic decisions.
- Liaison, research and training of human resources activities.

With the collected information, a database was integrated and analyzed with the SPSS® program.

The survey is presented in table S1 of the supplemental material that accompanies this article.

Results

The survey was submitted to 30 specialists, out of which 13 (43.3%) answered with information about an equal number of institutions in 6 States of the Mexican Republic (Table 1).

Median breast cancer new cases of the participating institutions was 300 patients per year (range: 50-950). Ten institutions (76.9%) referred having databases for cases to be reported (three had incomplete databases) and three (23.1%) did not. The database of hospitals belonging to the Mexican Institute of Social Security (IMSS – *Instituto Mexicano del Seguro Social*) is its own institutional epidemiological registry. Regarding affiliation, most institutions are covered by the *Seguro Popular* (People's Insurance) (5/13 [38.46%]), followed by IMSS (3/13 [23.07%]), private institutions not covered by *Seguro Popular* (2/13 [15.38%]), the Institute of Social Security and Services for State Workers (ISSSTE – *Instituto de Seguridad Social y Servicios para los Trabajadores del Estado*) (1/13 [7.7%]), the Institute of Social Security of the State of Mexico and Municipalities (ISSEMyM – *Instituto de Seguridad Social del Estado de México y Municipios*) (1/13 [7.7%]) and one hospital of the Ministry of Health not covered by *Seguro Popular* (1/13 [7.7%]).

As for human resources for the care of patients, only three institutions (23.1%), all of them in Mexico City, referred having all the specialists in the care team (surgical oncology, medical oncology, radiation oncology, breast radiology, rehabilitation, palliative care, plastic surgery, pathology, genetics, psycho-oncology and nutrition). The specialties that all institutions have (in-house or outsourced) were surgical oncology (surgical oncologist and/or gynecologic oncologist), breast radiology, palliative care, pathology and nutrition. The less common specialist in the institutions was the geneticist, who is only present in seven (53.8%); the

Table 1. Institution where specialists who participated in the survey work

City, State	Institution
Mexico City	Instituto Nacional de Cancerología de México
	Instituto de Enfermedades de la Mama (IEM) - FUCAM
	Hospital General de México Dr. Eduardo Liceaga
	Centro de Cáncer, Centro Médico ABC
	Hospital de Oncología, Centro Médico Siglo XXI – IMSS
	Hospital de Ginecoobstetricia n.º 3, Centro Médico Nacional La Raza - IMSS
Guadalajara, Jal.	Centro Médico Nacional de Occidente - IMSS
	Nuevo Hospital Civil de Guadalajara Juan I. Menchaca
San Luis Potosí, SLP	Clínica de Especialidades, Hospital General ISSSTE
Toluca, State of Mexico	Centro Oncológico Estatal, ISSEMyM
Monterrey, NL	Hospital San José - Tecnológico de Monterrey
	Hospital Zambrano Hellion - Tecnológico de Monterrey
Tepic, Nay.	Centro Estatal de Cancerología Nayarit

FUCAM (*Fundación de Cáncer de Mama*): Breast Cancer Foundation; ABC: American British Cowdray; IMSS (*Instituto Mexicano del Seguro Social*): Mexican Institute of Social Security; ISSSTE (*Instituto de Seguridad Social y Servicios para los Trabajadores del Estado*): Institute of Social Security and Services for State Workers; ISSEMYM (*Instituto de Seguridad Social del Estado de México y Municipios*): Institute of Social Security of the State of Mexico and Municipalities.

remaining centers that do not have this specialty, cannot outsource it either (Table 2).

Regarding the equipment for patient diagnosis, all institutions referred having ultrasound with breast transducer and guided excisional biopsies with breast marking (with harpoon or on the skin); only three (23.1%) have analog mammography and the majority (12 [92.3%]) have digital mammography; currently, most of them have a linear accelerator, and there is still an institution with access to a cobalt-60 machine by outsourcing (Table 3).

The assessment of drug availability revealed that almost all (12/13 [92.3%]) have trastuzumab available, whereas the rest of the targeted therapies were irregularly available in the institutions (Table 4). The two hormone therapies with the highest availability were tamoxifen and aromatase inhibitors (both in 12/13 [92.3%]). No single drug was available in all institutions, and neither was there any institution that had all drugs available (Table 4).

To complement the diagnoses and establish patient treatment, eight institutions (61.5%) answered that they do have genetic testing for hereditary cancer and most of them referred not having genetic testing available to support treatment decisions (Table 5).

Table 2. Availability of human resources in the institutions

Specialist	Availability (n = 13), n (%)		
	Yes	No	Outsourced
Surgical oncology	13 (100)	-	-
Medical oncology	12 (92.3)	1 (7.7)	-
Radiation oncology	10 (76.9)	1 (7.7)	2 (15.4)
Breast radiology	11 (84.6)	-	2 (15.4)
Rehabilitation	9 (69.2)	3 (23.1)	1 (7.7)
Palliative care	12 (92.3)	-	1 (7.7)
Plastic surgery	9 (69.2)	2 (15.4)	2 (15.4)
Pathology	12 (92.3)	-	1 (7.7)
Genetics	7 (53.8)	6 (46.1)	-
Psycho-oncology	10 (76.9)	2 (15.4)	1 (7.7)
Nutrition	13 (100)	-	-

Most institutions referred holding multidisciplinary sessions for therapeutic decision, with a median of one session per week; only three institutions informed on the number of attendees to the sessions, with a median of five participants.

Table 3. Equipment and services available in the institutions

	Availability (n = 13), n (%)		
	Yes	No	Outsourced
Analog mammography	3 (23.1)	10 (76.9)	-
Digital mammography	12 (92.3)	-	1 (7.7)
Tomosynthesis	7 (53.8)	6 (46.1)	-
Ultrasound with breast transducer	13 (100)	-	-
Magnetic resonance imaging (with with breast antenna)	7 (53.8)	2 (15.4)	4 (30.7)
Gamma camera (gamma probe)	8 (61.5)	5 (38.4)	-
Radionuclide lymphatic mapping	8 (61.5)	5 (38.4)	-
Lymphatic mapping with dye	12 (92.3)*	1 (7.7) [†]	-
Immunohistochemistry	12 (92.3)	-	1 (7.7)
Ultrasound-guided biopsy	11 (84.6)	1 (7.7)	1 (7.7)
Stereotactic-guided biopsy (cut ± aspiration)	11 (84.6)	1 (7.7)	1 (7.7)
Breast marking-guided biopsy	13 (100)	-	-
Linear accelerator for radiation therapy	10 (76.9)	1 (7.7)	2 (15.4)
Radiotherapy planning system	10 (76.9)	1 (7.7)	2 (15.4)
Cobalt-60 machine	-	12 (92.3)	1 (7.7)
Tissue bank	7 (53.8)	6 (46.1)	-
Biological sample bank	5 (38.4)	8 (61.5)	-

*In one institution, the doctor obtains it outside the hospital. [†]Trained specialists, difficulty to obtain the dye, in addition to its high cost and few cases at early stages.

Table 4. Drug availability in the institutions

Drug	Availability (n = 13), n (%)		
	Yes	No	Outsourced
Targeted therapies			
Trastuzumab	12 (92.3)	1 (7.7)	-
Lapatinib	7 (53.8)	6 (46.1)	-
Pertuzumab	5 (38.4)	8 (61.5)	-
Trastuzumab + Emtansine (DM1)	4 (30.7)	9 (69.2)	-
Hormone therapies			
Tamoxifen	12 (92.3)	1 (7.7)	-
Aromatase inhibitors	12 (92.3)	1 (7.7)	-
Fluvestrant	5 (38.4)	8 (61.5)	-
Everolimus	5 (38.4)	7 (53.8)	1 (7.7)
Palbociclib	3 (23.1)	10 (76.9)	-

With regard to research, liaison and human resources training activities, most institutions have an internal ethics committee (11/13 [84.6%]) and availability of resources for clinical trial monitoring and data management was heterogeneous (Table 6).

Table 5. Availability of complementary genetic testing for diagnosis

Type of test	Availability (n = 13), n (%)	
	Yes	No
Hereditary cancer	8 (61.5)	5 (38.4)
For treatment decision		
Oncotype [®]	3 (23.1)	10 (76.9)
MammaPrint [®]	2 (15.4)	11 (84.6)
Endopredict [®]	2 (15.4)	11 (84.6)

Discussion

The care of patients with breast cancer requires the coordination of highly specialized resources and personnel, in order to provide patients with comprehensive and optimal care.

The lack of basic resources to treat breast cancer is evident, especially in terms of diagnostic equipment and most medications for treatment.

Table 6. Research, liaison and human resources training activities

	Availability (n = 13), n (%)	
	Yes	No
Participation in cooperative groups	7 (53.8)	6 (46.1)
Source of the conducted trials		
Internal	9 (69.2)	4 (30.7)
External (industry)	8 (61.5)	5 (38.4)
Support to study protocols		
Monitoring	9 (69.2)	4 (30.7)
Data management	3 (23.1)	10 (76.9)
Human resources training		
Specialty residents*	8 (61.5)	5 (38.4)
High-specialty courses	7 (53.8)	6 (46.1)

*Surgical oncology, gynecologic oncology, medical oncology, radiation oncology.

Most institutions information was collected from, do have the essential disciplines for management (medical oncology, surgical oncology, breast radiology, palliative care, pathology and nutrition); however, there is a need to increase the availability of specialists in rehabilitation, genetics, plastic surgery and psycho-oncology, in order for a more comprehensive care to be provided. These deficiencies force some centers to refer patients somewhere else to complete their care, which generates treatment delay and compromises therapeutic outcomes. The option of outsourcing services the institutions lack, although it does not solve the underlying problem, can represent the difference of having access to a more complete service, which can result in a benefit for patients. It should be noted that the role of the geneticist is of utmost importance in our area, since up to 15% of cases are 40 years old or younger, and most of them are candidates for genetic testing.

Ideally, the sentinel node procedure should be carried out with radionuclide and dye; however, 61.5% of institutions have nuclear medicine, and the use of dyes such as patent blue has become highly expensive. In some centers, the patent blue dye is externally acquired by the treating doctors and/or patients because these type of supplies are not a priority for these hospitals. One option is using methylene blue dye, with very similar results to those obtained with other dyes, but the same prophylactic measures have to be taken into account due to the risk of anaphylactic reaction.

The training of human resources is a central issue to have the care brought to the places where it is required.

It is important for medical specialty residents, nursing staff and paramedical services to complete their training in centers with higher experience and prestige; however, the experience of this trainee personnel can be used to support the care of patients in places where currently there are no human resources training programs and patients are cared for.

At the administrative level, specific stimuli could be promoted in order for the type of specialists some cities of the country lack find it attractive to go there and complete the treatment teams. Although in this study the focus was on breast cancer, many of the specialists the institutions lack can also provide services to patients with other pathologies.

One of the main limitations of this study was low participation. Although the information was sent to 30 specialists who were previously sensitized about the importance of the work that was underway, participation did not exceed 44%. Although 76.9% of the participating institutions have databases, some databases are incomplete or lack the necessary variables to be included in multicenter trials. SMeO's GCIMOs goal is to facilitate collaboration between clinical care and research centers, with the purpose to optimize resources and favor scientific productivity in order to improve patient care (in our case, with the GCIMO-M, the care of patients with breast cancer). It is necessary to broaden the representativeness of the sample by including more hospitals, since this way there will be a more representative picture of the reality in our country, thus facilitating requesting from the corresponding authorities the resources that are lacking based on real figures. In many hospitals, the same specialist resolves the deficiencies of his/her institution to solve the patient's diagnostic or therapeutic problem; however, this rescue measure translates into the hospital not realizing its deficiencies and the specialist not fully practicing within his/her field.

Information such as that presented in this paper makes it evident that it is necessary to strengthen clinical research activities at hospitals where it is carried out, particularly with regard to study monitoring and data management. Institutional collaboration in multicenter trials will enable optimizing resources, and will increase the number of participants in studies, as well as their national representativeness. According to the results of the questionnaire applied in this project, now we know the capability of each institution to participate in multicenter trials; however, the lack of resources (both of personnel and equipment and medications)

limits the performance of larger projects that require more hospital infrastructure for the basic management of breast cancer.

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Conflict of interests

The authors declare not having any conflicts of interest.

Additional material

Supplementary material additional to this article can be found in its electronic version, available at <https://doi.org/10.24875/j.gamo.19000258>

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