MARKETING RESEARCH OF THE MEDICINE MARKET FOR THE TREATMENT OF BREAST CANCER IN UKRAINE

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Abstract: The article presents the results of the study of the marketing market of medicines for the treatment of breast cancer in Ukraine during 2019-2020. Medicine treatment schemes based on a clinical protocol were analyzed. On December 1, 2019, 184 drugs were registered for the treatment of breast cancer in Ukraine, and on December 1, 2020 - 194. In 2020, the largest share among of the studied drugs belongs to the group of antineoplastic and immunomodulatory drugs - 82.0%, and the group of drugs that affect the musculoskeletal system - 18.0%. On December 1, 2020, drugs were represented by 43 manufacturers, of which 18.6% were Ukrainian and 81.4% were foreign. Among Ukrainian companies, the primacy belongs to Pharmex Group LLC (4.1%), Teva Ukraine LLC (3.1%) and Farmak JSC (2.6%). The largest share of foreign suppliers occupies Great Britain - 26.3%, Switzerland and India by 11.9%. At that time, in 5 pharmacotherapeutic groups (L01AA01, L01BA01, L01CA04, L01XC07, M05BA03) is not represented by any drug Ukrainian manufacturer. Analysis of the assortment of drugs for the treatment of breast cancer by dosage form in 2020 showed that the main share (35.6%) is represented by concentrate for solution for infusion, 21.6% - tablets and 20.6% - lyophilisate for solution for infusion. Other dosage forms form a total of 22.2% of the total assortment of drugs, studied in the Ukrainian market.

Key words: breast neoplasms, antineoplastic agents, immunomodulating agents, breast neoplasms, musculoskeletal system.

Introduction. One of the most important medical and social problems in Ukraine and the world is the spread of malignant neoplasms (MN). Today, the incidence and mortality of the population from malignant neoplasms tend to rapid growth due to internal (age, sex, race, heredity) and external factors (lifestyle, eating habits, long-term medical intervention, such as the use of oral hormonal contraceptives or hormone replacement therapy) (Kamińska, Ciszewski, Łopacka-Szatan, Miotła, Starosławska, 2015). According to the World Health Organization, breast cancer (BC) ranks second in the world among all diseases as one of the most common, after lung cancer. In Ukraine, among the female population of breast cancer ranks first in the structure of cancer morbidity and mortality (WHO. International Agency for Research on Cancer). In connection with the above, the pharmaceutical supply of this group of patients, due to the necessary high-cost treatment, requires the involvement of significant financial resources for chemotherapy.

Since 2015, the Ministry of Health of Ukraine to ensure the effectiveness of treatment of cancer patients and improve their quality of life began to purchase drugs and medical devices in the field - chemotherapeutic drugs, radiopharmaceuticals and accompanying drugs for the treatment of cancer patients through such international organizations such as the United Nations Development Program, the UNICEF Children’s Fund and the British purchasing agency Crown Agents.

Scientists from different countries deal with the organization of providing the population with drugs for the treatment of breast cancer. Clinical and economic analysis of drugs for the treatment of breast cancer was conducted by Ukrainian scientists Nemchenko A.S., Podgaina M.V. (Nemchenko, Podgaynaya, 2009). The study of valuation was carried out by Berghuis A., Koffijberg H. and others (Berghuis, Koffijberg, Terstappen, Sleijfer, IJzerman, 2018).

The aim of the work was to study the saturation of the market with assortment positions and physical accessibility for patients of drugs for the treatment of breast cancer in the pharmaceutical market of Ukraine.

Materials: In 2015, the Ministry of Health of Ukraine developed and approved a unified clinical protocol for
primary, secondary (specialized), tertiary (highly specialized) medical care “Breast Cancer” (further - the Clinical Protocol for Breast Cancer) (Order of the Ministry of Health of Ukraine). It is based on the clinical guideline “SIGN Guideline 84: Breast Cancer in Women”, which was proposed by the national health service “Scottish Intercollegiate Guidelines Network (SIGN)”, and some sections are based on other guidelines, in particular:

NICE Clinical Guideline update CG 041: Familial breast cancer: the classification and care of women at risk of familial breast cancer in primary, secondary and tertiary care (partial update of CG 14), 2006 (Great Britain) (National Collaborating Centre for Primary Care, 2006).


ESMO Clinical Practice Guidelines for diagnosis, treatment and follow-up Primary breast cancer, August 2013 (Senkus, Kyriakides, Ohno, Penault-Llorca, Poortmans, Rutgers, Cardoso, 2015).


In the above-mentioned Clinical Protocol for breast cancer presents the schemes of drug treatment of breast cancer (chemotherapy, hormone therapy) and two lists (main and additional) of drugs used. An additional list of drugs is used when the relevant health care facility has sufficient funding, including the expense of the local budget, which in turn leads to improved quality and accessibility of treatment for citizens (Order of the Ministry of Health of Ukraine).

In the future, to implement the objectives of the study, a marketing analysis of the range of drugs used in the medical treatment of breast cancer. According to the unified anatomical-therapeutic and chemical classification system (ATC), the studied drugs belong to the groups “L - antineoplastic and immunomodulatory agents” and “M - agents that affect the musculoskeletal system”. The subgroup of L-drugs includes L01 - antineoplastic drugs (L01A - alkylating compounds, L01B - antimetabolites, L01C - alkaloids of plant origin and other drugs of natural origin, L01D - cytotoxic antibiotics and related drugs and L01X - other antineoplastic drugs). The group of M-drugs is represented by the subgroup M05 - drugs used to treat bone diseases (M05B - agents that affect the structure and mineralization of bones).

Among the above groups of drugs was formed a sample containing 15 names of drugs under international non-proprietary names and ATC codes, such as Cyclophosphamide (L01AA01), Methotrexate (L01BA01), Fluorouracil (L01BC02), Doxorubicin (L01D10), Pamidronic acid (L05BA03), Zoledronic acid (M05BA08), Pamidronic acid (M05BA03), Ironic acid (M05BA02).

To study the saturation of the market of drugs for the treatment of breast cancer, the State Register of Medicines of Ukraine was analyzed, which is presented on the official website of the State Expert Center of the Ministry of Health of Ukraine, data of the specialized medical internet-edition “Compendium 2019 – drugs” and scientific and practical publications on the topic of the article.

**Methods.** The methods of market research, systematization and generalization of the obtained results were used in the work.

**Discussion.** The study was conducted during 2019-2020 years. On December 1, 2019, 184 drugs were registered for the treatment of breast cancer in Ukraine, and on December 1, 2020 – 194 drugs.

At the first stage of the study, the results of the distribution of registered drugs by groups of ATC were analyzed. In 2020, the largest share among the studied drugs belongs to the group of antineoplastic and immunomodulatory drugs – 82,0 % (159 drugs), and the group of drugs that affect the musculoskeletal system – 18,0 % (35 drugs). All registered drugs on the pharmaceutical market of Ukraine are mono-drugs. A similar trend was proved by us in the market research in 2019 (Table 1).

The next stage was the study of the range of domestic and imported drugs for the treatment of breast cancer in the pharmaceutical market of Ukraine. According to the results of the analysis, it was found that the majority of registered drugs for the treatment of breast cancer in 2019-2020 years are drugs of foreign origin (Table 2). On December 1, 2020, drugs were represented by 43 manufacturing companies, of which 8 (18,6 %) were pharmaceutical companies - Ukrainian, and foreign - 35 (81,4 %). Among Ukrainian companies, the first place belongs to Pharmex Group LLC (8 drugs, 4,1 %). The second and third places are occupied by Teva Ukraine LLC (6 drugs, 3,1 %) and Farmak JSC (5 drugs, 2,6 %), respectively. The next place belongs to 02 Pharma LLC (2 drugs, 1,0 %). The other four Ukrainian manufacturers, such as Lumerier Pharma LLC, Rocket-Pharm LLC, Lekhim-Kharkiv JSC and Sanofi-Aventis Ukraine LLC, supply only one drug to the Ukrainian market. Compared to 2019, the number of Ukrainian pharmaceutical manufacturers has
Table 1. Distribution of drugs registered in Ukraine by groups of ATC classification used for the treatment of breast cancer.

The largest share among foreign suppliers in 2020 is occupied by such countries as the Great Britain - 51 drugs (26.3 %), Switzerland - 23 drugs (11.9 %) and In-

![Fig. 1. The structure of the range of drugs for the treatment of breast cancer (on 01.12.2020)](image-url)
Table 2. List of pharmaceutical companies-manufacturers of drugs for the treatment of breast cancer in Ukraine (as of 01.12.2020)

<table>
<thead>
<tr>
<th>№</th>
<th>Country</th>
<th>Manufacturer</th>
<th>Number of drugs</th>
<th>The ratio of % to total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Great Britain</td>
<td>Mistral Capital Management Ltd.</td>
<td>18</td>
<td>26,3</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>Accord Healthcare Ltd.</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>Anaxa Pharma Ltd.</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>M. Biotech Ltd.</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>Ananta Medicare Ltd.</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>Pharmex Group LLC</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td>Teva Ukraine LLC</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td>Farmak JSC</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
<td>02 Pharma LLC</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td>Lekhim-Kharkiv JSC</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td></td>
<td>Lumier Pharma LLC</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td></td>
<td>Rocket-Pharm LLC</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td></td>
<td>Sanofi-Aventis Ukraine LLC</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Ukraine</td>
<td>F. Hoffmann-La Roche Ltd</td>
<td>16</td>
<td>11,9</td>
</tr>
<tr>
<td>15</td>
<td></td>
<td>Almeda Pharmaceuticals AG</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td></td>
<td>Accord Healthcare AG</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td></td>
<td>Novartis Pharma AG</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td></td>
<td>Hetero Labs Limited</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td></td>
<td>Dr. Reddy’s Laboratories Ltd</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td></td>
<td>Glenmark Pharmaceuticals Ltd</td>
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<td></td>
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<tr>
<td>21</td>
<td></td>
<td>RR Pharmaceuticals Private Limited</td>
<td>2</td>
<td>11,9</td>
</tr>
<tr>
<td>22</td>
<td></td>
<td>Shilpa Medicare Limited</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td></td>
<td>Emcure Pharmaceuticals Ltd</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td></td>
<td>Sun Pharmaceutical Industries Ltd</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td></td>
<td>Medak Gezelshaft Ffyur Kklinishe SHP</td>
<td>13</td>
<td>10,3</td>
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<tr>
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<td>Germany</td>
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<td>27</td>
<td></td>
<td>Fresenius Kabi Deutschland GmbH</td>
<td>2</td>
<td></td>
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<tr>
<td>28</td>
<td></td>
<td>Denk Pharma GmbH &amp; Co. KG</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>29</td>
<td></td>
<td>Ebewe Pharma, GmbH Nfg KG</td>
<td>14</td>
<td>7,2</td>
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<td>30</td>
<td>Austria</td>
<td>Pfizer Inc</td>
<td>7</td>
<td>3,6</td>
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<td>31</td>
<td>Republic of Belarus</td>
<td>Belmedpreparaty RUE</td>
<td>5</td>
<td>2,6</td>
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<tr>
<td>32</td>
<td></td>
<td>Teva Pharmaceutical Industries Ltd</td>
<td>4</td>
<td>2,1</td>
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<td>33</td>
<td>Israel</td>
<td>M-Invest Ltd</td>
<td>4</td>
<td>2,1</td>
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<tr>
<td>34</td>
<td>Cyprus</td>
<td>KRKA, d.d., Novo mesto</td>
<td>3</td>
<td>2,1</td>
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<tr>
<td>35</td>
<td>Slovenia</td>
<td>Sandoz Pharmaceuticals d.d.</td>
<td>1</td>
<td></td>
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<tr>
<td>36</td>
<td></td>
<td>Accord Healthcare, S.L.U.</td>
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<td>1,5</td>
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<tr>
<td>37</td>
<td>Spain</td>
<td>Orion Corporation</td>
<td>2</td>
<td>1,0</td>
</tr>
<tr>
<td>38</td>
<td>Finland</td>
<td>Mylan, SAS</td>
<td>2</td>
<td>1,0</td>
</tr>
<tr>
<td>39</td>
<td>France</td>
<td>Pharmascience Inc.</td>
<td>2</td>
<td>1,0</td>
</tr>
<tr>
<td>40</td>
<td>Canada</td>
<td>Samsung Bioepis NL B.V.</td>
<td>2</td>
<td>1,0</td>
</tr>
<tr>
<td>41</td>
<td>Netherlands</td>
<td>Celltrion Healthcare Co., Ltd</td>
<td>2</td>
<td>1,0</td>
</tr>
<tr>
<td>42</td>
<td>Republic of Korea</td>
<td>Green Life Sciences LLC</td>
<td>1</td>
<td>0,5</td>
</tr>
<tr>
<td>43</td>
<td>Poland</td>
<td>Rompharm Company Georgia LLC</td>
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<td>0,5</td>
</tr>
<tr>
<td>44</td>
<td>Georgia</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total:</td>
<td></td>
<td></td>
<td>194</td>
<td>100</td>
</tr>
</tbody>
</table>
dia - 23 drugs (11.9%). Compared to 2019, Germany
came out of the top three, and its place was taken by
India. In 2019-2020 years, the largest number of drugs
from the Great Britain will be supplied by Mistral Cap-
tial Management Ltd. - 18 drugs (9.3 %), from Switzer-
land - F. Hoffmann-La Roche Ltd. (16 drugs, 8.2 %) and
India – Hetero Labs Limited (9 drugs, 4.6 %).

According to the results of the analysis of the struc-
ture of pharmacotherapeutic groups of drugs by manu-
facturer-countries, it was found that among Ukrainian
drugs the largest share is occupied by groups M05BA08
(Zoledronic acid) - 5 drugs (23.8 %) and L01BC05
(Gemcitabine) - 5 drugs (23.8 %). At the same time 5
pharmacotherapeutic groups (L01AA01, L01BA01,
L01CA04, L01XC07, M05BA03) not presented any
drug from the Ukrainian manufacturer (Fig. 1). Also in
2020, no registered drugs were presented in the group
M05BA02 (Clodronic acid). One drug from the group
M05BA02 was present in the clinical treatment protocol
in 2019, but lost registration on the market.

Analysis of the range of drugs for the treatment of
breast cancer by dosage form in 2020 year showed that
the main share (35.6 %) is represented by concentrate
for solution for infusion, 21.6 % - tablets and 20.6 % -
lyophilisate for solution for infusion. Other dosage
forms, such as powder for solution for injection, solution
for injection, solution for infusion, powder for solution
for infusion and lyophilized powder for solution for in-
fusion, form a total of 22.2 % of the total range of drugs,
studied in the market of Ukraine (Fig. 2).

Comparing the indicators of registered dosage forms
in 2019 year with 2020 year, the leadership remained in
such dosage forms as concentrate for solution for in-
fusion, tablets and lyophilisate for solution for infusion.
This indicates that the preferences of doctors for the use
of certain dosage forms in practice have not changed
significantly, and the number of registered drugs has
increased in proportion to them in the pharmaceutical
market of Ukraine.

**Conclusion.** A study of the range of drugs for the
treatment of breast cancer, which are registered in the
pharmaceutical market of Ukraine in 2019-2020 years.
According to the results of the study, it is established that
antineoplastic and immunomodulatory drugs are the most
widely represented on the Ukrainian market – 82.0 %
(159 drugs).

It is established that on December 1, 2020, domes-
tic pharmaceutical manufacturers supplied to the market
only 12.4 % (24 drugs) of the total range of drugs for the
treatment of breast cancer. Their production is carried
out by 8 enterprises, among them the leaders in Ukraine
are Pharmex Group LLC, Teva Ukraine LLC and Far-
mak JSC.

Most drugs for the treatment of breast cancer in
Ukraine are drugs foreign countries such as Great Brit-
in - 26.3 %, Switzerland - 11.9 % and India - 11.9 %.

The analysis of the dosage forms of the study group
showed that the main part (35.6 %) is a concentrate for
solution for infusion, 21.6 % - tablets and 20.6 % - ly-
ophilisate for solution for infusion, 22.2 % - all other
dosage forms.

Analysis of the range of drugs for the treatment of
breast cancer in the Ukrainian market by the structure of
manufacturers according to the ATX system showed that
in 6 pharmacotherapeutic groups (L01AA01, L01BA01,
L01CA04, L01XC07, M05BA03, M05BA02) no
drug from the Ukrainian manufacturer. And in group
M05BA02 (Clodronic acid) there are no registered drugs
from manufacturers.

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Consent to publication. All authors have read and approved the final version of the manuscript. All authors have agreed to publish this manuscript.

References


Order of the Ministry of Health of Ukraine dated 30.06.2015 №396 “On approval and implementation of medical and technological documents for the standardization of medical care for breast cancer”


World Health Organization. International Agency for Research on Cancer
Анотація: в статті представлено результати дослідження маркетингового ринку лікарських засобів для лікування раку молочної залози (РМЗ) в Україні протягом 2019-2020 років. Були проаналізовані схеми медикаментозного лікування РМЗ на основі клінічного протоколу. Станом на 01.12.2019 р. для лікування РМЗ в Україні було зареєстровано 184 ЛЗ, а на 01.12.2020 р. – вже 194. У 2020 році найбільша питома вага серед ЛЗ, що досліджувались, належала групі антинеопластичних та імуномодулюючих засобів – 82,0%, а групі засобів, що впливають на опорно-руховий апарат – 18,0%. Станом на 01.12.2020 р. ЛЗ представлені 43 фірма-виробниками, з них 18,6% – українські, 81,4% – іноземні. Серед українських фірм першість належить «Фармекс груп» (4,1%), «Тева-Україна» (3,1%) та «Фармак» (2,6%). Найбільшу питому вагу серед іноземних постачальників займають Велика Британія – 26,3%, Швейцарія та Індія по 11,9%. Значну кількість ЛЗ із Великої Британії постачає фірма-виробник «Містрал Кэпитал Менеджмент Лімітед» – 9,3%, зі Швейцарії – «Ф. Хофманн-Ля Рош Лтд» – 8,2% та Індії – «Гетеро Лабз Лімітед» – 4,6%. У той час в 5 фармакотерапевтичних групах (L01AA01, L01BA01, L01CA04, L01XC07, M05BA03) не представлено жодного препарату від українського виробника. Анализ асортименту ЛЗ для лікування РМЗ в Україні показав, що основна їх частина (35,6%) представлена концентратом для розчину для інфузій, 21,6% – таблетками та 20,6% – ліофілізатом для розчину для інфузій. Інші лікарські форми, такі як порошок для розчину для інфузій, розчин для ін'єкцій, розчин для ін'єкцій, розчин для ін'єкцій, піднімають значні обсяги асортименту ЛЗ, що вивчається, на ринку України.

Ключові слова: новоутворення молочної залози, протиопухлові засоби, імуномодулюючі засоби, новоутворення молочної залози, кістково-м'язова система.

Маркетингові вивчення РМЗ в Україні

Анотація: в статті представлені результати маркетингових вивчень лікарських засобів для лікування раку молочної залози (РМЗ) у 2019-2020 роках. Було проаналізовано склад асортименту ЛЗ, що використовуються для лікування РМЗ за різними лікарськими формами.

Ключові слова: новообразования груди, противоопухолевые средства, иммуномодуляторы, новообразования груди, опорно-двигательный аппарат.

Маркетингове вивчення РМЗ у Україні

Анотація: в статті представлені результати маркетингових вивчень лікарських засобів для лікування раку молочної залози (РМЗ) у 2019-2020 роках.

Ключові слова: новообразования груди, противоопухолевые средства, иммуномодуляторы, новообразования груди, опорно-двигательный аппарат.