Relapse occurrence among Albanian women diagnosed with breast cancer and treated with Taxane-based regimens as adjuvant chemotherapy

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Abstract

Aim: The aim of this study was to describe the distribution and clinical characteristics of women diagnosed with breast cancer and treated with taxane-based regimens as adjuvant chemotherapy in Albania.
Methods: A case-series study was conducted at the University Hospital Center "Mother Teresa" in Tirana during the period 2005-2007 including 35 women diagnosed with breast cancer and treated with adjuvant chemotherapy. The clinical diagnosis was based on biopsy findings. A follow-up took place during the period 2010-2012, where the relapse experience was recorded for all women included in the study. Fisher's exact test was used to compare the distribution of demographic and clinical characteristics of women according to their relapse status at the end of the follow-up period.
Results: Overall, there were 35 women treated with 4AC-4T Taxane-based (paclitaxel or docetaxel) regimens in this study. Of these, 8 (22.9%) women experienced relapse within four years compared with 27 (77.1%) women who did not manifest relapses after the fourth year of follow-up. Women who experienced relapse were generally younger, had a higher proportion of ductal cancer types and a higher prevalence of at least three positive nodules. Nevertheless, these differences were not statistically significant due to the rather small sample size.
Conclusion: This study provides important evidence about the distribution and clinical characteristics of Albanian women diagnosed with breast cancer and treated with Taxane-based regimens.

Keywords: cancer, chemotherapy, Taxane-based regimens, 4AC-4T.

Introduction

Breast cancer is the second most frequent cancer in Albania after lung cancer (1). Cancer is the second leading cause of death in Albania following circulatory system diseases (1). The treatment of breast cancer generally involves multiple modalities including surgery, radiation and/or chemotherapy. *Adjuvant treatment* is the administration of additional therapy after primary surgery to kill or inhibit micrometastasis (2). Depending on the model of risk reduction, adjuvant therapy has been estimated to be responsible for 35%-72% of the reduction in mortality rate (3).

The taxane class of antimicrotubule anticancer agents is perhaps the most important therapy against cancer in addition to the chemotherapeutic armamentarium. This has been shown over the past several decades in different countries worldwide.

Paclitaxel and docetaxel have become very popular agents of adjuvant regiments in the last decade since their official approval following excellent results in treating metastatic breast cancer and several other types of cancer (4). Taxanes are preferred in adjuvant chemotherapy because of their pharmacokinetic profile, consistent positive results, and convenient, intermittent, brief infusion schedule. These drugs are not subject to cross-resistance with anthracyclines and are more active than the commonly used anthracyclines (5).

The aim of this study was to assess the distribution and clinical characteristics of women diagnosed with breast cancer and treated with taxane-based regimens, 4AC/4T (paclitaxel or docetaxel), as adjuvant chemotherapy in Albania.

Methods

A case-series study was conducted at the University Hospital Center "Mother Teresa" in Tirana during the period 2005-2007 including 35 women diagnosed with breast cancer and treated with adjuvant chemotherapy. The clinical diagnosis was based on biopsy findings. A follow-up took place during the period 2010-2012, where the relapse experience was recorded for all women included in the study.

Fisher's exact test was used to compare the distribution of demographic and clinical characteristics of women according to their relapse status (relapse vs. no relapse at the end of the follow-up period). In all cases, a p-value ≤ 0.05 was considered as statistically significant. The Statistical Package for Social Sciences (SPSS, version 17.0) was used for all the statistical analyses.

Results

Overall, there were 35 women treated with taxane-based regimens in this study.

Table 1 presents the distribution of relapse time among women treated with 4AC-4T (paclitaxel or docetaxel) medications. There were 2 women (5.7%) women who experienced a relapse within the first 12 months; 2 (5.7%) within 24 months; 1 (2.9%) within 36 months; and 3 (8.6%) women within 48 months. On the other hand, 27 (77.1%) women did not manifest relapses after the fourth year of the follow-up period.

Table 1. Distribution of relapse time among women treated with Taxane-based regimens

Relapse time	Number	Percentage
<12 months	2	5.7
12-24 months	2	5.7
25-36 months	1	2.9
37-48 months	3	8.6
>49 months	27	77.1
Total	*35*	*100.0*

Table 2 displays the distribution of demographic and clinical characteristics by relapse experience of women included in this study. For this analysis, women were categorized into: "no relapse at all"

(27 women who did not experience relapse after the fourth year of follow-up) vs. "relapse" (8 women, regardless of the time period of their relapse experience).

Women who experienced relapse were generally younger than those who did not manifest relapse at the end of the follow-up (the proportion of women aged 56-70 years was 0% vs. 22.2%, respectively), regardless of the lack of statistical significance of this finding (overall P=0.296) probably due to the small sample size.

There was a higher proportion of ductal cancer types in women who experienced relapse (75.0%) compared to women who did not experience relapse (63.0%) although this finding was not statistically significant too (P=0.598).

The proportion of at least three positive nodules was substantially higher among women who experienced relapse (71.4%) compared with those who did not experience relapse (47.8%) but this difference was not statistically significant (P=0.239) given the modest sample size.

The prevalence of triple negative hormonal values was considerably higher among who experienced relapse (42.9%) compared to their counterparts who did not experience relapse (11.5%), but this difference was also not statistically significant (P=0.137).

As presented in Table 2, none of the observed differences between the two groups (women who experienced relapse vs. those who did not experience relapse) reached the conventional level of statistical significance due to the rather small sample size.

Table 2. Distribution of demographic and clinical characteristics by relapse status of Albanian women with breast cancer treated with Taxane-based regimens

Variable	No relapse (N=27)	Relapse (N=8)	P-value[†]
Age-group:			
≤35 years	1 (3.7)[*]	-	
36-45 years	9 (33.3)	2 (25.0)	0.296
46-55 years	11 (40.7)	6 (75.0)	
56-70 years	6 (22.2)	-	
Cancer type:			
Ductal	17 (63.0)	6 (75.0)	0.598
Lobular	7 (25.9)	2 (25.0)	
Other	3 (11.1)	-	
Nodules:			
Positive 1-3	11 (47.8)	1 (14.3)	0.239
Positive >3	11 (47.8)	5 (71.4)	
Negative	1 (4.3)	1 (14.3)	
Hormonal values:			
Estrogen-Progesterone negative (HER-2 unknown)	7 (26.9)	3 (42.9)	
Estrogen-Progesterone positive (HER-2 unknown)	8 (30.8)	-	0.137
Estrogen-Progesterone positive (HER-2 negative)	5 (19.2)	-	
Estrogen-Progesterone positive (HER-2 positive)	3 (11.5)	1 (14.3)	
Triple negative	3 (11.5)	3 (42.9)	

[*] Number and column percentages (in parenthesis).

[†] P-values from Fisher's exact test.

Among women who experienced relapse (N=8), there were 2 (25.0%) cases where the relapse site involved the lungs; 1 (12.5%) case with liver involvement; 2 (25.0%) cases with bone involvement; and 3 (37.5%) cases which involved other sites (Table 3).

Table 3. Distribution of relapse site among women who experienced relapse (N=8)

Relapse time	Number	Percentage
Lungs	2	25.0
Liver	1	12.5
Bones	2	25.0
Other sites	3	37.5
Total	*8*	*100.0*

Discussion

As reported in the international literature, adjuvant chemotherapy has been estimated to be responsible for 35%-72% of the reduction in mortality rate (3). Studies conducted in the past few decades have consistently shown that chemotherapy increases the recovery rate and the overall survival rate (7).

Multiple components determine the necessity for patients requiring adjuvant chemotherapy. These include, but are not limited to the tumor size, molecular subtype, histology and its grade. The axillary and regional lymph node status and the tumor hormone receptor expression are also important factors which should be taken into consideration (8). Nodal status also plays a role with any nodal involvement lowering the survival rate at five years (9).

The 2011 EBCTCG meta-analysis also included taxanes such as docetaxel and paclitaxel in its analysis of adjuvant therapy. Incorporation of taxanes into an anthracycline containing regimen after eight years was associated with a reduction in the risk of recurrence, risk of breast cancer mortality, and overall mortality. These benefits were present independent of age, nodal status, tumor size, tumor grade, or estrogen receptor (ER) status (10).

Our study confirms these findings notwithstanding the small size sample, consisting of 35 women treated with 4AC-4T Taxane-based (paclitaxel or docetaxel) regimens. Of these, 8 (22.9%) women experienced relapse within four years compared with 27 (77.1%) women who did not manifest relapses after the fourth year of follow-up. Women who experienced relapse were basically younger, had a higher proportion of ductal cancer types and a higher prevalence of at least three positive nodules. Yet, these differences were not statistically significant.

The most frequent site of relapse involved skin, brain and lymphnodules, which together accounted for 37.5%. The second most frequent site involved lung and bones, respectively 25.0% each and the less frequent site was the liver with 12.5%. These data are important in order to assess survival rate after recurrence (11,12).

In conclusion, our study provides useful evidence about the distribution and clinical characteristics of Albanian women diagnosed with breast cancer and treated with Taxane-based regimens as adjuvant chemotherapy. These findings may help determining the main clinical characteristics which affect the recurrence of breast cancer in Albanian women.

Conflicts of interest: None declared.

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