Immune thrombocytopenic purpura (ITP) and breast cancer. Does adjuvant therapy for breast cancer improve platelet counts in ITP?

Although both breast cancer and immune thrombocytopenic purpura (ITP) are common conditions, the simultaneous coexistence of these two diseases is rare. ITP is an autoimmune disease in which the presence of autoantibodies against platelets results in splenic sequestration and thrombocytopenia that may be associated with lymphoid neoplasms [1]. Except for an observational case series of 10 patients [2], only a few individual case reports of ITP coinciding with breast cancer have been reported [3–8]. We are reporting two cases with simultaneous confirmed ITP and breast cancer. The platelet counts in both women have improved during adjuvant breast cancer chemotherapy.

**case 1**

A 39-year-old woman was known to have chronic thrombocytopenia which was diagnosed during her first antenatal screening 8 years before her presentation with a left breast lump. Since then her platelet counts were ranging from 40 000/mm² to 120 000/mm². She did admit to history of heavy menstrual blood loss. Investigations at the time established the diagnosis of ITP.

Histopathology following wide local excision and sentinel lymph node biopsy confirmed a grade III, 11-mm invasive
ductal carcinoma, 100% estrogen receptor (ER) positive, 70% progesterone receptor (PgR) positive without amplification of the HER2 gene. She underwent four cycles of adjuvant AC (doxorubicin and cyclophosphamide).

During adjuvant chemotherapy, her platelet count increased unexpectedly from 80 000/mm² to 141 000/mm²; platelets reached a plateau of 130 000/mm² during adjuvant radiotherapy. Currently, she is on adjuvant tamoxifen and her platelet count remains stable at 100 000/mm².

case 2
A 38-year-old patient presented with a platelet count of 20 000/mm². She was known to have thrombocytopenia since the age of 17. She did have history of menorrhagia but no other bleeding. Investigation confirmed the diagnosis of ITP. During the thrombocytopenia workup, a left breast lump was detected. She was commenced on a short course of prednisone 50 mg daily. After her platelet count increased to 96 000/mm², a biopsy was carried out followed by a wide local excision and axillary sentinel lymph node biopsy. This confirmed a triple-negative (ER/PgR/HER2 human epidermal growth factor receptor 2 negative) invasive ductal carcinoma. Concern about bleeding risk excluded her from a clinical trial involving adjuvant chemotherapy with or without bevacizumab [BEATRICE Study: A Study of Avastin (Bevacizumab) Adjuvant Therapy in Triple-Negative Breast Cancer without bevacizumab [BEATRICE Study: A Study of Avastin (Bevacizumab) Adjuvant Therapy in Triple-Negative Breast Cancer]. She was given six cycles of adjuvant FEC-100 (5-fluorouracil, epirubicin and cyclophosphamide). Halfway through the chemotherapy, her platelet count normalized despite cessation of the corticosteroids. Her platelet count remains >100 000/mm² to date.

discussion
In the published oncology literature, like our cases, most patients with ITP concurrently with breast cancer had a long time interval between the two diseases, indicating that ITP and breast cancer were completely coincidental.

Unless splenic metastasis or bone marrow infiltration by tumor cells is shown by radiological, scintigraphic or histopathologic examinations, the association between ITP and breast cancer should probably be considered unrelated. ITP may respond to steroid therapy before the diagnosis of breast cancer and during the follow-up period as we also observed in our cases. In the published cases, curative surgery followed by adjuvant chemotherapy in early breast cancer did not prevent the relapse of ITP in the postoperative period. The two patients presented had only a relatively short follow-up but their platelet counts have been maintained since they had chemotherapy.

Of the 19 previously reported cases, only two patients had splenic metastasis from breast cancer [8] and bone marrow metastasis was present in 7 of the 19 cases (37%) [2–8]. Immune-mediated platelet destruction and presence of serum platelet agglutinins in solid tumors associated with ITP are other possible reasons [3].

In both these patients with ITP, there was concern about the safety of adjuvant chemotherapy in face of thrombocytopenia.

Unexpectedly, the platelet count in both instances has risen. The presence of a diagnosis of ITP might not prohibit a breast cancer patient from adjuvant chemotherapy. However, there are no reports in the literature on the effect of antiangiogenic agents such as bevacizumab on ITP. With the introduction of these agents into clinical practice this question will need to be addressed in future clinical trials.

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references

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