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CORRESPONDENCE

A Case of Anastrozole-Induced Erythrocytosis

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Dear Editor,

Anastrozole, a third-generation aromatase inhibitor (AI) is used as adjuvant treatment for post-menopausal women with hormone receptor positive Breast Carcinoma (BCa). Common side effects associated with the use of Anastrozole are skeletal complications, sexual dysfunction, musculoskeletal pain, thromboembolism, cardiac and cerebrovascular disease [1]. We, however, report an unvisited adverse event; erythrocytosis induced with use of anastrozole in patient with BCa.

A 65-year-old South Asian, post-menopausal, non-comorbid woman underwent left breast lumpectomy and was diagnosed with Estrogen and progesterone receptor positive BCa stage TxN_0M_0, for which she was treated with 6 cycles of Docetaxel, Cyclophosphamide, followed by radiotherapy and subsequently started on Anastrozole 1 mg once daily in July 2014. Prior commencing anastrozole, her haemoglobin, and haematocrit levels were 11.4 gm/dl and 34% respectively, while her other blood counts were normal.

In December 2017, she was found to have raised haemoglobin and haematocrit levels of 18.6 gm/dl and 59.9% respectively, normal white blood counts of 5230/cumm, platelet counts of 156,000/cumm. She had no symptoms and was normal on physical examination with normal blood pressure. Further tests revealed a normal liver and kidney function tests, a normal serum erythropoietin [EPO] levels of 6.88 [reference 3.70–31.5]. Bone marrow aspiration and biospy showed no evidence of myeloproliferation or dysplasia. JAK2 V617 and exon12 were not mutated and BCR-ABL translocation by PCR was negative. Her chest X-Ray, echocardiography and pulmonary function tests were normal. A diagnosis of secondary erythrocytosis due to Anastrozole was considered for which phlebotomy was started on regular intervals to maintain a haemoglobin level of 12–15 gm/dl. After first phlebotomy, her haemoglobin dropped to 16.2 gm/dl.

AI has been known to increase testosterone levels by preventing the breakdown of testosterone into estradiol. Androgens have been associated with increased red blood cell production [2]. Gonzales and Chaupis [3] has described that testosterone causes erythrocytosis by increasing the serum EPO levels, but in our case serum EPO levels were normal, which indicates that AI induced erythrocytosis by EPO independent mechanism.

On Naranjo assessment scale, the association of erythrocytosis with AI use was found to be probably associated with a score of 7, justifying our diagnosis. WHO-UMC scale also depicted probable causality association of use of anastrozole with erythrocytosis [4]. To the best of our knowledge, four cases have been reported, in which the first two cases involved two boys with hypogonadism treated with letrozole and subsequently developed erythrocytosis. The third case involved 79-year-old post-menopausal lady with localized estrogen receptor positive (ER+) BCa treated with exemestane developed erythrocytosis and the forth case involved 57-year-old post-menopausal lady with invasive ER + BCa treated with neo-adjuvant chemotherapy followed by an anastrozole and developed secondary erythrocytosis along with raised testosterone levels and haematocrit became normal after cessation of anastrozole [5].

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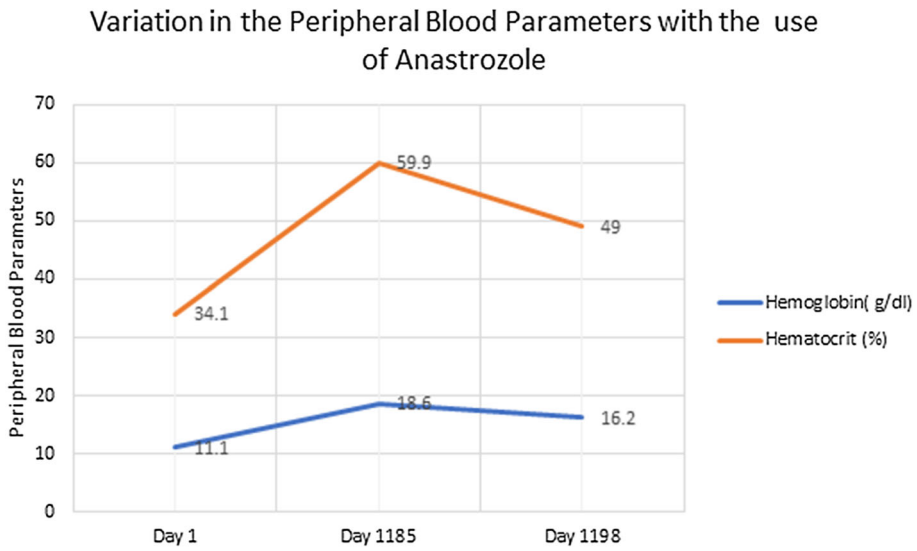

Fig. 1 Variation in the blood parameters with the use of Anastrozole

Irregular follow up with non availability of complete blood counts and testosterone levels after start of anastrozole were the limitations of this study (Fig. 1).

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Compliance with Ethical Standards

Conflict of interest The authors declare no conflict of interest.

Ethical Approval All procedures performed in study involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. The study was approved by our Institutional Review Board.

Informed Consent The informed consent was obtained from the individual participant included in the study.

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