Journal of Bone Oncology 5 (2016) 159–162

Contents lists available at ScienceDirect

Journal of Bone Oncology

journal homepage: www.elsevier.com/locate/jbo

Research paper

Assessment of bone health in breast cancer patients starting adjuvant aromatase inhibitors: A quality improvement clinical audit

Jamal Zekri [a,b,*], Kamel Farag [c,d]

[a] Associate Professor, Al-Faisal University, Saudi Arabia
[b] Consultant Oncologist, King Faisal Special Hospital & Research Centre (Jeddah), PO BOX 40047, Jeddah 21499, Saudi Arabia
[c] Lecturer of Medical Oncology, Mansoura University, Egypt
[d] Assistant consultant Oncologist, King Faisal Special Hospital & Research Centre (Jeddah), Saudi Arabia

ARTICLE INFO

Article history:
Received 10 April 2016
Received in revised form
22 May 2016
Accepted 30 May 2016
Available online 2 June 2016

Keywords:
Breast cancer
Aromatase inhibitors
Bone health
DEXA scan
Clinical audit

ABSTRACT

Introduction: Adjuvant Aromatase Inhibitors (AIs) predispose breast cancer patients to accelerated bone loss. Guidelines recommend initial screening and follow up of bone mineral density with dual energy X-ray absorptiometry (DEXA) scan. In this audit we assessed the rate of adherence to these guidelines and introduced awareness measures to improve it.

Methods: All post-menopausal women who started upfront adjuvant AIs (letrozole in all patients) between January 2007 and December 2013 were retrospectively identified. The standard to be audited was "These patients should have a baseline DEXA scan requested within the first 3 months of starting adjuvant AIs therapy". A 90% or more compliance was accepted as satisfactory. Corrective measures in the form of educational and awareness sessions followed by re-auditing of the practice over the subsequent 12 months were planned in case of lower compliance rate.

Results: Three hundred and sixty seven eligible patients were identified. Baseline DEXA scan was performed in 188 (51.2%) patients. As planned, this result triggered the conduction of 4 consecutive educational sessions over a period of 2 weeks. Re-auditing the practice in the pre-defined subsequent subjects showed compliance in 47/52 (90.4%) patients.

Conclusion: This study of a sizable cohort confirms previous observations that adherence to skeletal health guidelines in this patient population is less than adequate. Adherence is improved dramatically by raising the awareness of relevant physicians.

1. Introduction

Breast cancer (BC) is the most frequently diagnosed cancer and the leading cause of cancer related death among women worldwide [1]. The incidence of BC is increasing in many regions of the world [2].

Surgical resection is the main curative treatment of early BC. In patients with oestrogen receptor positive (ER+) tumors, the outcome can be improved by depriving microscopic disease from oestrogen. Tamoxifen, a selective ER inhibitor improves recurrence free survival (RFS) and reduces breast cancer mortality in these patients [3]. Multiple randomized clinical trials confirmed the superiority of adjuvant aromatase inhibitors (AIs) when compared with tamoxifen in post-menopausal women [4]. Thus AIs (letrozole, anastrazole and exemestane) have become the standard adjuvant hormonal treatment in post-menopausal women with ER+ BC. AIs profoundly reduce the levels of circulating oestrogen, subsequently having deleterious effects on skeletal health. Prolonged treatment with AIs increases bone resorption, reduces bone mineral density (BMD) and increases the risk of fracture [5].

Guidelines and consensus guidance statements highly recommend assessment of skeletal health of these patients including performing a Dual Energy X-ray absorptiometry (DEXA) scan and subsequent Life style and medicinal intervention guided by T score results [6–8]. Consequently, oncologists assumed the unusual role of screening and management of cancer treatment induced bone loss. Whether these guidelines are implemented in real life daily practice remains largely an unanswered question. In an attempt to answer this question, we conducted a large audit to identify if a baseline DEXA scan was requested at the time of starting adjuvant

* Corresponding author at: Associate Professor, Al-Faisal University, Saudi Arabia.
E-mail addresses: jmzekri@hotmail.com (J. Zekri), faragkamel@yahoo.com (K. Farag).

http://dx.doi.org/10.1016/j.jbo.2016.05.007
2212-1374/

AIs. In addition, we introduced correctives measures and subsequent re-auditing of practice.

2. Patients and methods

All patients (n=554) who started any adjuvant hormonal therapy for newly diagnosed ER+ early BC between January 2007 and December 2013 at King Faisal Specialist Hospital & Research Centre (Jeddah) were identified from pharmacy database. Electronic and paper medical records of these patients were screened. During the above and the subsequent audit periods, the number of oncologists treating patients with BC increased from 3 (1 consultant and 2 assistant consultants) to 6 (3 consultants and 3 assistant consultants). All consultants received oncology higher medical training and certification in North America, Canada or Europe while all assistant consultants were trained in Middle Eastern countries. Three hundred and sixty seven out of 554 patients were post-menopausal and started upfront adjuvant AIs (letrozole in all patients) and were the subject of the primary audit. The standard to be audited was "These patients should have a baseline DEXA scan requested within the first 3 months of starting adjuvant AIs therapy". This information was extracted from the electronic medical records. Investigators extracted and analyzed the data over a period of 3 months (July-September 2014). A 90% or more compliance with the standard was accepted as satisfactory. Corrective measures followed by re-auditing were planned if lower compliance rate was achieved. Corrective measures comprised of 4 consecutive educational sessions over a period of 2 weeks (December 2014) targeting junior and senior oncologists. The sessions addressed the rational of assessment and management of skeletal health in these patients and attempted to raise the awareness to guidelines. These sessions were in the form power point presentations delivered by the audit lead (the first author of this manuscript). Contents of awareness sessions included (a) Effects of AIs on oestrogen synthesis. (b) Bone health analysis of large adjuvant trials confirming detrimental effect of AIs on BMD. (c) Local hospital guidelines. (d) International guidelines and consensus guidance statements including (not limited to) NICE, ASCO, St Gallen and ESMO guidelines. (e) Clinical risk factors for fracture. (f) Recommendations of above guidelines: "A baseline DEXA scan is an integral tool for assessing skeletal health of patients starting adjuvant AIs for the treatment of ER+ BC and to offer calcium, vitamin D and bone modifying agents if T score < -2". (g) Rationale of using bone modifying agents (bisphosphonates and denosumab) in the prevention of AIs induced bone loss. In particular, oncologists were encouraged to request a base line DEXA scan for new patients at the time of starting adjuvant AIs. Compliance with the standard was planned to be re-audited for all eligible patients who will receive letrozole during the subsequent 12 months (January December 2015).

3. Results

3.1. Compliance with the standard

All patients were under follow up for >6 months from date of starting adjuvant AIs. Baseline DEXA scan was requested and performed in 188/367 (51.2%) patients within 3 months of starting treatment. This compliance rate is considered below the predefined target of 90% and thus corrective measures (as detailed in methods section) were undertaken. Noncompliance with the audit standard was seen in 179 (48.8%) patients of whom only 35 patients had a later (range: 4–49 months) DEXA scan assessment and there was no evidence of such assessment in the remaining 144 patients.

These results were disseminated to all members of the oncology team during one of the regular departmental quality meetings.

3.2. Re-audit

Fifty two patients started upfront adjuvant AIs for newly diagnosed ER+ early BC between January 2015 and December 2015. Baseline DEXA scan was requested and performed in 47/52 (90.4%) patients. These results were disseminated to all oncologists. Relevant treating oncologists were notified of their individual patients (number=5 patients) who did not undergo a baseline DEXA scan during the re-audit period.

4. Discussion

Recommendations of international guidelines consistently recommend assessment of skeletal health of women with ER+ BC receiving adjuvant AIs including the performance of a baseline DEXA scan [7-12]. The United Kingdom (UK) National Institute of Clinical Excellence (NICE) appraises medical interventions and publishes quality standards designed to drive improvements within particular areas of health or care. In addition, NICE considers the cost of these interventions to reassure commissioners that the services they are purchasing are also cost effective. NICE guideline clearly recommend performing a baseline DEXA scan to assess BMD for women with early BC starting adjuvant AIs [6]. In line with the above, our local guidelines recommend a baseline DEXA scan for these patients and to offer calcium, vitamin D and bisphosphonates if T score < -2.

Clinical audit is a quality improvement cycle that involves measurement of the effectiveness of health care against agreed and proven standards for high quality and taking action to bring practice in line with these standards so as to improve the quality of care and health outcomes (Fig. 1).

Based on these principles we designed an audit to identify if a baseline DEXA scan was requested at the time of starting adjuvant AIs in post-menopausal women with ER+ BC. The results of our audit show that about half (48.8%) of eligible patients were not screened according to guidelines. Consequently, some unscreened patients will miss the opportunity to receive specific bone directed preventative and therapeutic treatment when indicated. To our knowledge, there are only 3 previous reports in the literature

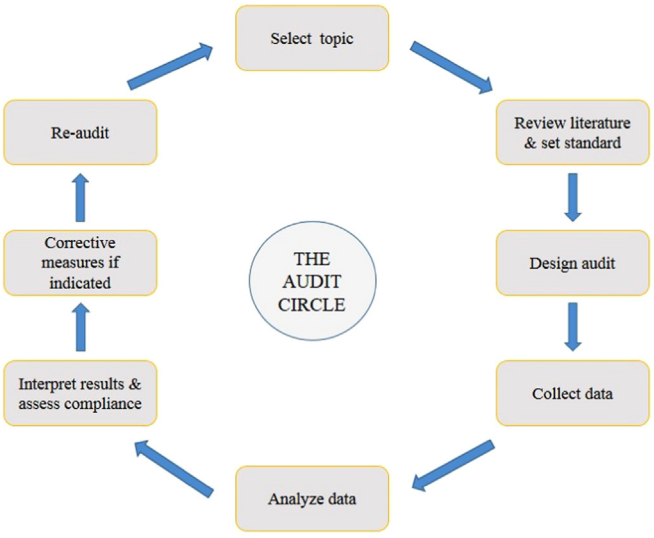

Fig. 1. Principles of the clinical audit circle.