



Managing Menopausal Skin: A Clinician's Review

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INTRODUCTION

Menopause is a natural biological transition in a woman's life, marking the permanent cessation of menstruation, and typically occurring around the age of 51 years. The preceding phase, perimenopause, is characterised by significant hormonal shifts, with fluctuating and ultimately declining levels of oestrogen and progesterone. While vasomotor and psychological symptoms are well-recognised, the impact of menopause has far-reaching consequences, including significant structural and functional alterations in the skin, hair, and vulvovaginal tissues. A comprehensive understanding of these dermatological changes is essential for clinicians supporting women through menopause, if they are to address these diverse and often distressing concerns.

THE CELL BIOLOGY OF OESTROGEN DEPRIVATION

Both oestrogen receptor alpha (ER α) and oestrogen receptor beta (ER β) are widely expressed throughout the skin in epidermal keratinocytes, dermal fibroblasts, and hair follicles,¹ with the highest concentrations found in the facial and genital skin.^{1,2} When

activated by oestrogen, they orchestrate a cascade of genetic and cellular responses, accounting for the widespread and tissue-specific changes observed.³

One of the most critical roles of oestrogen is maintaining the extracellular matrix of the dermis. Oestrogen stimulates the production of procollagen I, the precursor to collagen, and increases the levels of tropoelastin and fibrillin, which are components of elastic fibres.³ Furthermore, oestrogen downregulates the expression of matrix metalloproteinases, the enzymes that break down collagen.³ This delicate balance of synthesis and degradation is vital for maintaining skin firmness and elasticity. It is estimated that women lose approximately 30% of their cutaneous collagen in the first 5 years post-menopause, a loss more closely correlated with the duration of oestrogen deficiency than with chronological age.^{1,3} Oestrogen replacement has been consistently shown to reverse these changes, leading to increased epidermal thickness and a significant increase in skin collagen content, correcting but not overcorrecting collagen deficiency.¹ One study demonstrated a 6.49% increase in skin collagen after 6 months of oral oestrogen, and in another trial, dermal

thickness increased by 30% after 1 year of oral oestrogen therapy.³

Oestrogen also plays a key role in skin hydration. It significantly increases the levels of glycosaminoglycans and hyaluronic acid (HA) in the dermis.⁴ HA, in particular, is a powerful humectant, capable of holding vast amounts of water.⁴ Oestrogen also increases the water-holding capacity of the stratum corneum, improving the skin's barrier function.⁴ The combination of diminished collagen, elastin, and hydration leads to an increase in skin wrinkling and a reduced skin elasticity, both of which are demonstrably improved with oestrogen replacement.^{3,4}

Beyond structural components, oestrogen is a potent antioxidant. The presence of the A-ring phenol in oestrogen allows it to directly attenuate reactive oxygen species generated by processes such as the Fenton reaction.³ Reactive oxygen species are major contributors to skin ageing, causing damage to DNA, proteins, and lipids, and oestrogen deficiency leaves the skin more susceptible to this oxidative damage.³

In wound healing, oestrogen enhances the migration of dermal fibroblasts and promotes collagen deposition.³ It also appears to increase the secretion of latent transforming growth factor-beta 1 (TGF- β 1), a crucial cytokine involved in wound repair.³ Delayed re-epithelialisation and reduced collagen deposition were noted in the wounds of postmenopausal women compared to premenopausal women, and these changes improved with oestrogen administration.³

CLINICAL MANIFESTATIONS OF MENOPAUSE IN THE SKIN, HAIR, AND VULVA

Skin-related symptoms in menopause are common and, in the author's view, frequently under-reported by patients and inadequately addressed by healthcare professionals. A survey of women attending a menopause clinic demonstrated that 100% of respondents had at least one skin symptom, yet 48% of these women had not disclosed their skin concerns to their

medical professionals.⁵ Their Dermatology Quality of Life Index (DLQI) score ranged from 0–17 (median: 5), demonstrating that skin has a significant impact on quality of life for many women.⁵ A DLQI score >10 indicates a severe impact on quality of life.

General Skin Changes

Increased skin dryness and associated pruritus are prevalent concerns among postmenopausal women not receiving hormone replacement therapy (HRT).² This is attributable to the decrease in glycosaminoglycans and HA, as well as compromised stratum corneum and skin barrier function.¹ Oestrogen replacement has been shown to improve epidermal hydration and the water-holding capacity of the stratum corneum, as demonstrated by increased electrical capacitance.¹

Hot flushes, a common vasomotor symptom, reflect impaired peripheral vascular control due to oestrogen deficiency.^{1,2} The resolution of these symptoms with oestrogen replacement underscores the hormone's integral role in peripheral circulatory regulation.¹

Impact on Pre-existing Dermatoses

Evidence regarding the specific impact of menopause on many established skin diseases is limited, yet in one survey, 46% of women noted a deterioration in a previously diagnosed skin condition.⁵

Vasomotor flushing, together with increased skin sensitivity, can aggravate rosacea.²

Acne is well recognised in perimenopause, affecting approximately 25% of women.⁶ Its aetiology is multifactorial and involves a relative androgen excess, increased inflammation, defective skin barrier function, and possible changes to the skin microbiome.⁷

Management is challenging, as standard treatments can exacerbate dry menopausal skin,⁶ and the incidence of relapse⁷ and post-inflammatory hyperpigmentation is high in this population.⁶

Topical retinoids and azelaic acid are effective treatment options for both active acne and post-inflammatory changes, if tolerated.⁷ Systemic antiandrogens, such as spironolactone, have also shown benefit in persistent adult female acne,^{6,7} though evidence in a purely menopausal population is lacking.

The impact of menopause on other common skin conditions, including atopic eczema, psoriasis, and hidradenitis suppurativa, has not been fully evaluated, and findings from existing studies have not been consistently reproduced.² The potential impact on the skin barrier function, reduced inhibition of the T helper 1 cell-mediated pathway, and the androgenic hormonal shift post-menopause may plausibly affect such conditions.² Further research into these common dermatoses throughout menopause is needed.

Impact on Hair

Oestrogen exerts a notable influence on hair follicle biology, primarily affecting the hair growth cycle. Oestrogens decrease the telogen (resting) phase and prolong the anagen (growing) phase of the hair cycle in trichogram studies.^{3,8} Conversely, androgens (testosterone and dihydrotestosterone) can inhibit scalp hair follicles, which is a key mechanism in androgenic alopecia.⁹ Furthermore, women express higher levels of aromatase in scalp hair follicles than men, indicating that conversion of testosterone to oestrogen via this enzyme is protective against alopecia in women.⁸ Progesterone may also offer a protective effect by inhibiting the 5 α -reductase enzyme that converts testosterone to the more potent dihydrotestosterone.⁹

The impact of hormones on hair growth is further supported by clinical observations, such as the increased proportion of anagen hairs during pregnancy (a high oestrogen state), subsequent telogen effluvium postpartum,⁸ and the common occurrence of scalp hair thinning in women treated with aromatase inhibitors, which suppress local oestrogen synthesis.³

Immunohistochemical studies have shown that ER β is the predominant oestrogen receptor expressed in human non-balding scalp anagen hair follicles in both men and women.³ *In vitro* studies have demonstrated that 17 β -oestradiol can stimulate hair shaft elongation in frontotemporal male hair follicles, indicating a direct stimulatory effect.⁸

It is therefore not surprising that menopausal women notice changes in hair growth and quality. In a survey of menopausal women, 82% noted at least one hair symptom, most commonly hair thinning (54%) and hair shedding (44%).⁵ However, evidence for the use of HRT to manage hair thinning in menopause is lacking.⁹

Female pattern hair loss (androgenic alopecia) incidence increases post-menopause. Circulating androgen levels are usually normal; therefore, the hypo-oestrogen state and relative androgen/oestrogen ratio are the presumed causative factors.⁹ Recognised treatments include topical or oral minoxidil and 5 α -reductase inhibitors. There is insufficient evidence to support HRT in this condition.⁹

Hirsutism can affect up to 50% of postmenopausal women. It may be aggravated by testosterone replacement. Again, it is the relative imbalance of androgens and oestrogen that is likely to be important in the aetiology.⁹

Impact on the Vulva and Genitourinary Syndrome of Menopause

The vulvovaginal epithelium is particularly sensitive to oestrogen levels, possessing a high concentration of oestrogen receptors. In the aforementioned survey, 84% of menopausal women reported vulval symptoms, including dryness (58%), itch (54%), and soreness (34%).⁵

In the female genital tract, hypo-oestrogen leads to epithelial atrophy, decreased natural lubrication, decreased blood flow, and loss of collagen elastin and adipose tissue.^{10,11} These result in architectural changes such as loss of labial volume.¹⁰ The vulval skin becomes less elastic and more

susceptible to irritation and micro-trauma, contributing to overall discomfort and significantly impacting quality of life.^{10–12} These changes commonly manifest as symptoms such as vaginal dryness, itching, burning, urinary symptoms, and painful intercourse (dyspareunia). This collection of symptoms is known as genitourinary syndrome of menopause (GSM), and affects up to 84% of postmenopausal women.^{10–12} Co-existence with other vulval conditions, such as lichen sclerosus and vulvodynia, is not uncommon.¹¹ GSM significantly impacts physical, sexual, and mental health, and affects quality of life.¹² Correction of this oestrogen deficiency with topical or systemic oestrogen therapy can alleviate these symptoms, though early diagnosis and treatment are key.¹² A significant care gap exists, as many women do not volunteer information about these symptoms, and clinicians often do not proactively inquire.¹² This gap needs to be bridged to enable women to receive appropriate care early on in the condition, when treatment is more likely to be successful. Topical (vaginal) oestrogen therapy does not carry the same systemic risks as HRT,¹² and it is vital to educate healthcare professionals and patients in order to alleviate unfounded fears and improve uptake.

Maintaining the pelvic floor is also important for women with GSM who are symptomatic, and the value of women's health physiotherapy should not be overlooked.¹⁰

NAVIGATING THE MENOPAUSE HEALTH MARKET

The global menopause market is rapidly expanding, with a recent valuation of 17.79 billion USD in 2024, and a projected growth to 24.35 billion USD by 2030.¹³ This proliferation of commercially available products, including cosmetics, dietary supplements, and various alternative therapies, creates a complex and challenging landscape for women navigating the symptomatic stages of menopause.

Skincare, especially, is important throughout menopause, and clinicians supporting

menopausal women are well placed to provide advice. Ensuring that high-quality products that are non-comedogenic are used on the skin, using gentle skin cleansers, and avoiding potential allergens and irritants for sensitive skin are key. Topical retinoids stimulate fibroblast-mediated collagen synthesis, improve skin elasticity, and promote angiogenesis,¹⁴ and can therefore be a crucial addition to a menopausal woman's skincare routine, though they can cause dryness and irritation. Patients should be counselled to use a high-factor UVA and UVB sunscreen meticulously to minimise such side-effects.

A critical concern is the current lack of high-quality, robust, evidence-based data regarding the efficacy and safety of many products marketed to menopausal women. This includes, but is not limited to, oral supplements, phyto-oestrogens (plant-based products with a similar structure to oestrogen), light-emitting diode therapies, and probiotics. Some products may also cause other unwanted side effects; for example, the application of topical oestrogen cream has been associated with the development of melasma.¹⁵

The author's main concern is that menopausal women will suffer through misdirection and delayed care, missing out on evidence-based treatments and incurring significant financial costs while trialling heavily marketed products with unsubstantiated claims.

Therefore, there is a compelling need for a more rigorous evaluation of these non-traditional treatments to provide clear guidance for both clinicians and patients.

CONCLUSION AND FUTURE DIRECTIONS

In summary, the declining oestrogen and progesterone levels in perimenopause and menopause have a profound effect on the skin, hair, and vulval tissue. These lead to distressing symptoms that are not often recognised as part of the menopausal transition.

The precise impact of menopause on the trajectory of common inflammatory skin diseases is poorly defined. Furthermore, while HRT is effective for many symptoms of oestrogen deficiency, its specific role as a primary or adjunctive therapy for dermatological conditions requires more

robust evaluation. There is an urgent need for further research to clarify these issues, develop targeted therapeutic strategies, and ensure clinicians are equipped with the knowledge to support women fully through their menopausal journey.

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