INTISARI

Latar Belakang: Vitamin D dan metabolitnya telah lama diketahui sebagai hormon yang mengatur homeostasis kalsium-fosfat dan menjaga integritas tulang. Selain itu, vitamin D juga diketahui memiliki efek pada fungsi fisiologis kulit. Pada fungsi sawar kulit, vitamin D diketahui dapat memperbaiki integritas dan permeabilitas sawar kulit melalui kemampuannya untuk mengatur proliferasi dan diferensiasi keratinosit serta sintesis substansi-substansi yang penting untuk sawar kulit. Sawar kulit berfungsi untuk membatasi evaporasi air dari tubuh dan mencegah masuknya patogen ke dalam tubuh. Sawar kulit ini terutama bekerja dengan mengontrol tingkat penguapan air melalui epidermis atau *transepidermal water loss* (TEWL) pada stratum korneum. Sawar kulit yang intak akan membatasi TEWL yang terjadi setiap hari.
Tujuan: Untuk mengetahui efek vitamin D topikal pada tingkat TEWL kulit.
Material dan Metoda: Rancangan penelitian ini adalah uji klinik acak tersamar ganda berpembanding bahan pembawa (*double blind randomized vehicle controlled trial*). Subjek merupakan laki-laki sehat berusia 20-40 tahun. Randomisasi dilakukan dengan dengan randomisasi *split body*. Losion vitamin D dan losion yang berisi bahan pelembab kulit, yang selanjutnya disebut losion pembanding, dioleskan di lengan atas subjek sebanyak dua kali sehari selama dua minggu. Tingkat TEWL diukur dengan Tewameter saat sebelum dan sesudah pemberian losion. Penelitian dilakukan di Departemen Dermatologi dan Venereologi Fakultas Kedokteran, Kesehatan Masyarakat, dan Keperawatan pada April 2019-Juli 2019. Uji analitik berbasis komparatif dilakukan untuk mengetahui perbedaan TEWL sebelum dan sesudah pemberian losion vitamin D dan pembanding.
Hasil: Didapatkan rerata tingkat TEWL 6,3112 g/m^2/h sebelum pemberian losion pembanding dan 4,6331 g/m^2/h setelah pemberian losion pembanding (**p value*=0,326). Rerata tingkat TEWL 6,8212 g/m^2/h sebelum pemberian losion vitamin D dan 4,0462 g/m^2/h setelah pemberian losion vitamin D (**p value*=0,079). Perubahan tingkat TEWL grup losion pembanding -1,6781 g/m^2/h dan grup losion vitamin D -2,775 g/m^2/h (**p value*=0,474).
Kesimpulan: Tidak ada perbedaan nilai TEWL yang signifikan antara kelompok yang diberi losion vitamin D dengan kelompok pembanding.

Kata Kunci: vitamin D topikal, sawar kulit, penguapan air melalui epidermis (*transepidermal water loss/TEWL*)

ABSTRACT

Background: Vitamin D and its metabolites have long been known as a hormone that regulates calcium-phosphate homeostasis and maintains bone integrity. In addition, vitamin D is also known to have some effects on the physiological functions of the skin. In the skin barrier function, vitamin D is known to improve the integrity and permeability of the skin barrier through its ability to regulate the proliferation and differentiation of keratinocytes as well as the synthesis of substances essential for the skin barrier. Skin barrier functions to limit the evaporation of water from the body and prevent pathogens from entering the body. Skin barrier primarily works by controlling the rate of evaporation of water through the epidermis or transepidermal water loss (TEWL) in the stratum corneum. The intact skin barrier will limit the TEWL that occurs every day.
Objective: To determine the effect of topical vitamin D on skin TEWL levels.
Material and Methods: The design of this study was a double blind randomized vehicle controlled trial. The subjects were healthy men aged 20-40 years. Randomization was done by using split body randomization. Vitamin D lotion and lotion containing skin moisturizing ingredients, hereinafter referred to as comparison lotion, was applied to the subject's upper arm twice a day for two weeks. TEWL levels were measured by Tewameter before and after lotion administration. The study was conducted at the Department of Dermatology and Venereology, Faculty of Medicine, Public Health, and Nursing in April 2019-July 2019. A comparative-based analytical test was conducted to determine the differences in TEWL before and after giving vitamin D and comparison lotion.
Results: The average TEWL level was 6.3112 $g/m^2/h$ before giving the comparison lotion and 4.6331 $g/m^2/h$ after giving the comparison lotion (*p value = 0.326). The average TEWL level was 6.8212 $g/m^2/h$ before giving vitamin D lotion and 4.0462 $g/m^2/h$ after giving vitamin D lotion (*p value = 0.079). The change in the TEWL level of the comparison lotion group was -1.6781 $g/m^2/h$ and the vitamin D lotion group was -2.775 $g/m^2/h$ (*p value = 0.474).
Conclusion: There was no significant difference in TEWL levels between the group given vitamin D lotion and the comparison group.

Keywords: topical vitamin D, skin barrier, transepidermal water loss/TEWL