

Histological Study of Normal and Precancerous Human Skin

Thesis

Submitted in partial fulfillment of the
M.Sc. degree in Histology

By

Sarwat Lotfi Ahmed Abdel-Latif

M.B.B.Ch

Demonstrator of Histology
Faculty of Medicine, Cairo University
Fayoum Branch

Supervisors

Prof. Dr. Somaya Saad Zaghoul

Professor of Histology
Faculty of Medicine, Cairo University

Prof. Dr. Salwa Metwally Ali

Professor of Histology
Faculty of Medicine, Cairo University

Dr. Nadia Mahmoud Mohammed

Assistant Professor of Histology
Faculty of Medicine, Cairo University

Faculty of Medicine
Cairo University

٢٠٠٣

Summary and Conclusion

Actinic keratosis is a common precancerous lesion occurring on sun-exposed fair skin usually affecting older individuals of either sex. Actinic keratosis is characterized by a prolonged clinical course with a potential to progress to SCC in up to 16% of cases. Some authors prefer to describe the disease process of AK as a continuum at whose start there is UV light induced mutation of the p53 gene on chromosome 17 of keratinocytes in the exposed skin and at the end of the process there is SCC. Ultra-violet light acts here as a tumor initiator and promoter.

The purpose of this study was to demonstrate the nature, degree and extent of histological changes taking place in sunlight-exposed skin showing actinic keratosis (AK). Furthermore the objective histological grading of this common precancerous lesion would permit more convenient evaluation of its course during progression towards malignancy.

Data from skin biopsies, which were taken from twenty patients presenting with AK of the forearm to the department of dermatology in the university clinics of Bonn in Germany during the period from 2000 to 2002, were processed in this study. The biopsies were taken from the AK lesions themselves, the apparently normal paralesional skin adjacent to them, and from the medial aspect of the upper arm as a control. The specimens were subjected to both light and electron microscopic examination. This was done to verify the statistical results obtained by analysis of the light microscopic data. The study showed that out of the twenty lesional specimens two (10%) showed minimal changes while 18 (90%) showed moderate to severe affection. Out of the apparently normal paralesional regions a total of 4 (20%) cases showed a considerable degree of affection of the keratinocytes with changes native to AK. The rest of

paralesional specimens displayed variable grades of milder atypia among their epidermal cells.

After processing all available data, the study has led to the conclusion that it is possible to grade the state of progression of AK lesions based on a plot of the proportion of the affected nuclei and the average discriminant function score for the most affected nuclei in a biopsy sample. This plot provides a monotonically rising progressive curve and a numeric grading score.

Finally it is possible to say that AK is a tumor-inducing lesion with a definitive potential to progress to invasive SCC if left untreated. Actinic keratosis is directly and closely related to UV irradiation, for UV light acts as a tumor initiator as well as a tumor promoter. Actinic keratosis is a preventable possibly fatal cancer of the skin if only treated at the stage of AK, or better if prevented from the very start by avoiding UV overexposure. Thus as prevention is better than treatment, we should apply every measure available to shield the skin from the damaging effect of UV rays whenever possible.

Conclusion

It is possible to say that AK is a preventable precancerous skin lesion which if left untreated may develop into a fatal cancer.

Karyometry was proved in this study to be a valuable and easily applicable procedure by which lesions of AK can be successfully graded. It allows the establishment of a reproducible objective measurement of disease progression in case of AK.

A similar study on a bigger cohort in Egypt is recommended in order to assess the prevalence and the prognosis of AK in the Egyptian population.