

STUDIES ON VITILIGO WITH SPECIAL REFERENCE TO NEURAL CONCEPT

(Summary of observations based on a monogram)

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This article presents the summary of observations and conclusions of a monogram based on a study of Vitiligo patients by the author. He was the recipient of an Award by the Paragon Charitable Trust in 1974 which has been announcing an annual award for the best paper on Vitiligo through our Journal. This article has been sent for publication by the author in response to a request from the Editorial Board. (Ed.)

Clinical

Vitiligo has been found to be of common occurrence in our country representing near about 3.5 - 4% of all cutaneous ailments and is perhaps showing an ascending incidence in the recent years, the reasons for which are not clear.

Clinical and statistical assessments have shown no difference in the incidence among the sexes, religions, occupations, dietetic habits, marital status or socio-economic status. However people with constitutional nervous instability seem to be more vulnerable.

In about 2/3rd of the cases the age of onset has been between 10 and 25 years.

Incidence of vitiligo has shown no preponderance among ABO blood groups, the secretors or non-secretors.

Heredo-familial incidence of vitiligo has been found in 20% of cases whereas Diabetes mellitus, and Bronchial

asthma and/or Atopic dermatitis have been recorded in nearly 26.5% and 41% respectively - the last two being reported for the first time.

Irritable G/I tract syndrome (specially exaggerated gastrocolic reflex), palmo-plantar hyperhidrosis and emotional instability have been found co-existent in a significantly large percentage of patients. In comparison, association of Diabetes mellitus, other endocrinal disorders or Bronchial asthma has appeared insignificant.

Aetiologic importance of parasitic helminthic infestation of G/I tract and/or hepatic deficiency seemed to have been over-emphasised under erroneous impression built on uncontrolled study.

Minor trauma, pressure and friction have been recorded contributory for onset and/or spread of lesions in half the number of cases. Occurrence of isomorphic phenomenon in this disease has been described for the first time in Indian subjects. Psychological unrest seemed to have played a role in 25% of cases while in 20% cases some degree of itching specially

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confined to newly erupting patches have appeared to be neurologically significant.

Pretibial regions have been found to be the commonest area of affection in contrast to forearms as noted by Western observers. Palms and soles have shown frequent involvement and not spared as a rule, as opined by some Western authorities.

Three distinct patterns of distribution of lesions have been noted :—

- i) bilateral, nearly symmetrical lesions on different parts of the body (vulgaris type),
- ii) bilateral, symmetrical involvement chiefly of the hands and feet, including palms and soles, and peri-orificial regions (acro-orificial type),
- iii) lesions of unilateral and apparently dermatomal distribution (pseudosegmentalis type). The first two patterns have often been found overlapping, specially after few years of duration. Such distribution on theoretical analysis, has suggested nerves as the anatomical distributor system.

Lesions of shorter duration occurring on hair-bearing areas or muscular part and having minimum of achromotricosis in relatively younger patient, unassociated with overt emotional or constitutional nervous instability, have been found to respond better to routine therapy conducted judiciously.

Dermatophysiological

Somesthetic sensibility has been detected to be normal over the lesions irrespective of their duration.

Density of 'cold-spots' in depigmented skin has been found equal to that of corresponding normal area.

Increased index of cold numbness over the fingers affected by vitiliginous process has been noted specially in the subjects with acro-orificial type of the disease.

The resting surface temperature varying between 31°C and 34.8°C has been found to be equal in both affected and corresponding non-affected areas.

Relatively greater fall of skin temperature over the vitiliginous areas has occurred under experimental exposure to generalised body cooling.

Relatively lesser increase of skin temperature over the vitiligo patches has been recorded under the effect of generalised body heating as studied experimentally.

Relatively lesser increase of surface temperature in the vitiliginous lesions following physical exercise and slower rate of return to pre-exercise level has been observed.

Relatively lesser fall of surface temperature under the effect of localised cooling has been recorded in the lesions.

Relatively higher rise of surface temperature in the lesions under the effect of localised heating has been noted.

Sluggish recruitment of cyclic sweating activity with lesser intensity under increased environmental temperature has been observed in the affected areas but paradoxically with increased sweating in the affected palms and soles.

Higher threshold of sweating in vitiligo lesions has been recorded in response to local heat application at different levels of increasing environmental temperature.

A little more sustained local sweating in response to intradermal infiltration of Acetylcholine has been observed in vitiliginous patches.

Axon-reflex type of sweating induced by intradermal infiltration of Nicotine tartrate has been found to be poorer in the lesions.

Adrenergic focal sweating (recently said to be of axon-reflex type) has also been found poorer in the lesions.

Somewhat delayed onset of emotional sweating has been noted in the vitiligo subjects under increased room temperature.

Galvanic skin response has been found to have followed a reverse pattern in the vitiligo affected palms.

More prolonged blister resorption time has been noted in the vitiligo lesions.

Focal bleeding time has also been observed to be more prolonged in affected areas.

Adrenaline blanch has been seen to be more sustained in involved areas.

Histological : Histochemical : Neuro histological

Routine histological study under H & E stain has shown normal epidermis with absence of melanin. The dermis has shown scattered cellular infiltrate in many instances.

Negative response to DOPA reaction has been uniformly demonstrated in vitiliginous skin sections as studied by Laidlaw's method.

Lesser cholinesterase activity has been displayed in the vitiliginous areas as studied by histochemical technique of Gomori.

Degenerative changes in the nerve bundles and twigs have been noted under light microscope in about 42% of cases with the vitiliginous vulgaris type of lesions when stained by Romane's method.

Skin sections obtained from lesions of pseudosegmentalis type have displayed degenerative changes of the nerve twigs in 66.6% of cases.

Epilogue

In view of the immense socio-medical impact of this otherwise benign disease, specially among the brown caucasoids and negroids concerted multi-dimensional approach to this enigmatic problem cannot be over-emphasised. The efforts so far made through divergent channels have failed to pin-point the real cause or causes of this disorder. Enormous basic materials have been collected from the studies related to the melanocyte from its embryological evolution to its terminal disappearance in a vitiligo patch to suggest an interplay of neural influences in its pathogenesis. By and large, an autonomic imbalance has been finally surmised on the basis of analytical evaluation of all such biomedical facts. The heterogenous data as reproduced from a few published preliminary reports but mostly from unpublished works done by the author at different phases tend to qualify the postulated autonomic imbalance, as 'peripheral sympathetic hypotonia'. However, it is far from clear whether this sympathetic hypotonia is an effect of the pathologic events; reflecting perhaps the functional correlate of the structural involvement of intracutaneous nerve fibres, which, in all probability, represent the sympathetic component as evident from anatomical relationship with the cutaneous appendages. Alternatively this hypotonia may be a pre-requisite for the genesis of vitiligo under either local or remote influences. If so, this may bear an aetiopathogenic significance. Till any satisfactory explanation of the implication of sympathetic hypotonia in vitiliginous patches is forthcoming, the same may be at best looked upon as a common deno-

minator in the pathogenesis of vitiligo. At the present state of our knowledge, the substantiation of the fact obviously calls for similar studies, particularly neurohistological, in larger series of cases. This can be well facilitated by employing acetylcholinesterase method advocated recently by Muller and Winkelmann (1969) for studying qualitative and quantitative degeneration of cutaneous nerve fibres. The present position also calls forth many more pre-designed, purposive, multi-discipli-

nary, delicate investigative approaches in the domain of cutaneous neuro-enzymic activities in reference to the probability of remote higher level influences which may be displayed through hypothalamo-pituitary-adrenal axis. This study seems to be of paramount importance in evaluating the centrifugal effects of stress factors, exogenous or endogenous, on the complex but harmonised functions of autonomic nervous system as a whole in vitiligo subjects.

TRUE or FALSE?

Absent or markedly reduced excision repair of DNA in fibroblast culture is a diagnostic feature of Xeroderma Pigmentosum (XP).

(Answer Page No. 218)