

Expression of CD117 and PDGFR α in patients with alopecia areata.

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Introduction:

- Varied therapeutic strategies in alopecia areata indicates that other unknown factors play a role in the pathogenesis.
- A lot of growth factors play a role in the development and cycling of the hair follicle
- The role of these molecules in the autoimmune disease process is unknown.
- Hence this study was planned to compare the expression of CD117 and PDGFR- α in patients with alopecia areata and normal controls.

Methods:

- Thirty biopsy samples of alopecia areata and eighteen normal control samples were included in this cross-sectional study.
- Immunohistochemistry was done to detect the expression of CD117 and PDGFR α in cases and controls.
- The mean percentage of follicles expressing CD117 and PDGFR α was compared among cases and controls
- The staining was rated by extent (0= no staining;1= 1% - 24%; 2= 25% - 49%; 3= 50% -74%; and 4= 75% -100%)of the cell population of interest per high power field) and by the intensity of staining (1+, weak; 2+, moderate; and 3+, strong)

Results:

- The mean number of follicles expressing CD117 in anagen and catagen hairs differed significantly in cases and controls.
- The extent and intensity of staining with PDGFR α correlated significantly with the severity of alopecia areata according to the Severity of alopecia tool (SALT) score.
- PDGFR α was expressed more in catagen follicles

Discussion:

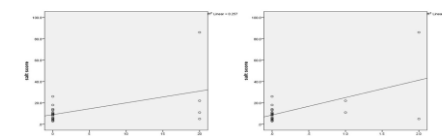
- In catagen, expression of PDGF may be reduced causing increased expression of PDGFR α in follicles.
- Correlation of this expression of PDGFR α with the severity of the disease indicates that PDGF may have a possible role in the premature truncation of anagen.
- Catagen inducing cytokines like IFN γ could reduce expression of stem cell factor , thereby increasing the expression of CD117 in catagen follicles

Table 1: Staining characteristics of CD117: * significant by Mann Whitney U test

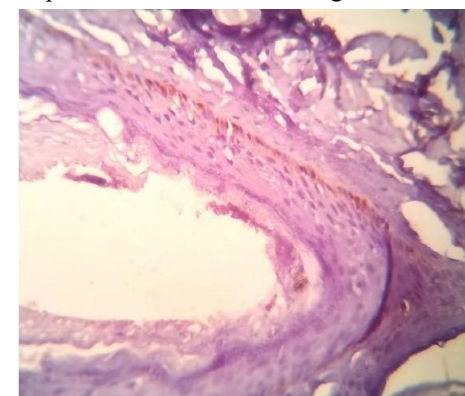
		No. of positive follicles	% of positive follicles (mean \pm SD)	Extent of positivity	Intensity of positivity
Anagen	cases	32 *	34.18 \pm 35.81	1	2 *
	controls	6	14.35 \pm 33.31	1	1
Catagen	cases	117 *	68.04 \pm 23.02	2 *	2 *
	controls	42	40.12 \pm 36.04	1	1
Telogen	cases	4	15.384	1	2
	controls	1	8.33	1	3

Table 2: Staining Characteristics of PDGFR α :

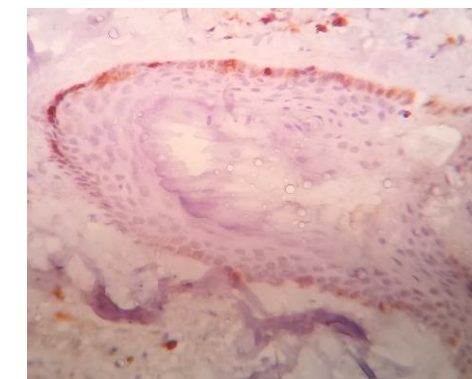
		No. of positive follicles	% of positive follicles (mean \pm SD)	Extent of positivity	Intensity of positivity
Anagen	cases	3	7.43 \pm 21.60	1	0
	controls	0	0	0	0
Catagen	cases	24	18.98 \pm 23.10	1	1
	controls	29	27.70 \pm 27.11	1	1
Telogen	cases	0	0	0	0
	controls	0	0	0	0



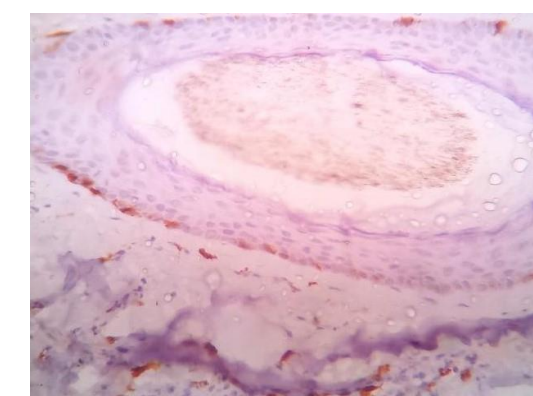
Scatter plots showing the correlation of SALT score with the extent (left) and intensity(right) of expression of PDGFR α in anagen hair follicles



Immunohistochemistry showing expression of CD117(C-kit) in catagen hair follicle with intensity of 1+ in 30% of cells. (IHC, 400x)



Immunohistochemistry showing expression of PDGFR α in catagen hair follicle with intensity of 1+ in 10% of cells. (IHC, 400x)



Immunohistochemistry showing expression of CD117 in anagen hair follicle with intensity of 3+ in 5% of cells. (IHC, 400x)

Conclusion:

- The variation in expression of CD117 among cases of alopecia areata and controls and correlation of PDGFR α with the severity of disease could imply a role for these growth factors in the pathogenesis of alopecia areata.
- Knowing this could explain the role of platelet rich plasma and antihistamines in the treatment of alopecia areata.