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ORIGINAL RESEARCH

STUDY OF CORRELATION BETWEEN CLINICAL AND HISTOPATHOLOGICAL DIAGNOSIS IN PATIENTS WITH SCALP LESIONS AT A TERTIARY HEALTH CENTER

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ABSTRACT

Background: In human beings, scalp is unique amongst skin areas to have five layers of soft tissue covering the cranium. Scalp lesions are the most neglected at early stage since they are not effectively seen. So visible scalp lesions and alopecia affect individual's self esteem and confidence. Scalp surface is susceptible to a variety of lesions clinically, attributing to trauma, infection, inflammation, abscess, allergic reaction, parasitic infestation or tumour. Scalp is among the most frequently involved site in generalized skin diseases like seborrheic dermatitis and psoriasis. Only few articles regarding the histology of scalp lesions could be found in the literature. Also this type of study was not been done in this part of Maharashtra. So, the present study aims at Clinicopathological correlation of scalp lesions with the help of simplified, informative technique of scalp biopsy. **Materials and methods:** Present study was descriptive observational study, conducted in patients with scalp lesions who are voluntarily willing for scalp biopsy procedure. Patients of non-scarring alopecia and patients without any visible scalp lesion were excluded from the study. **Results:** We included total 60 patients of scalp lesions, majority of the patients were from 31-40 years and above 60 years age group (21.7 % each), were males

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(56.78%), located at parietal area (56.7%) were neoplastic (96.7%). Out of 58 neoplastic lesions, majority were benign i.e., 55 (91.7%) and remaining were malignant i.e. 3 (5%). Clinical diagnosis of the majority lesions revealed epidermal cyst (43.3%) followed by lipoma (10%) & Sebaceous Cyst/Trichilemmal Cyst/ Wart (5 % each). Histopathological diagnosis of the lesions revealed Trichilemmal Cyst (16.7%) in majority cases followed by, epidermal cyst (11.7 %), lipoma (10 %), dermoid cyst and epidermal inclusion cyst (8.3% each). Report of histopathological and clinical diagnosis correlation revealed 100% correlation in Basal Cell Carcinoma, Epidermal Cyst, Hypohidrotic Ectodermal Dysplasia, Metastasis from PTC, Poorly Differentiated SCC and Syringocystadenoma Papiliferum. It is followed by 83.3% correlation in lipoma cases. We found no correlation of histopathology with clinical diagnosis in Compound Nevus, Epidermal Inclusion Cyst, Infected Dermoid Cyst, Infected Epidermal Cyst, Infected Epidermal Inclusion Cyst, Infected Sebaceous Cyst, Neurofibroma, Nevus Sebaceous, Proliferating Trichilemmal Cyst, Pseudopelade of Brocq, Sebaceous Cyst and Seborrheic Keratosis. **Conclusion:** Mostof the scalp lesions are indistinguishable clinically, so histopathological correlation is must for accurate diagnosis.

Keywords: scalp lesions, trichilemmal cysts, epidermal cysts, squamous cell carcinoma, histopathological correlation

INTRODUCTION

In human beings, scalp is unique among skin areas having five layers of soft tissue covering the cranium, to serve its function of protection of brain. Dark, warm and damp environment of scalp surface, making it susceptible to a variety of lesions clinically, attributing to trauma, infection, inflammation, abscess, allergic reaction, parasitic infestation or tumour. [1] Also, scalp skin is subjected to brushing and contact with other styling implements that can cause friction injury and may introduce microorganisms.[2]

These unique features of the scalp make it susceptible to superficial mycotic conditions (dandruff, seborrheic dermatitis, and tinea capitis), parasitic infestation (pediculosis capitis) and inflammatory conditions (psoriasis).[3] These disease processes of the scalp can have significant overlap in clinical symptomatology. Hyperkeratosis (scaling), pruritus, alopecia, and inflammatory signs (erythema, purulence) are common symptoms of scalp disorders. Scaling and pruritus are extremely common complaints.

Primary scalp lesions include tinea capitis, traction alopecia, folliculitis keloidalis nuchae and folliculitis decalvans. Scalp is among the most frequently involved site in generalized skin diseases like seborrheic dermatitis and psoriasis.[4] It is also commonly involved in lichen planus and other conditions like atopic dermatitis, pityriasis rubra pilaris and secondary syphilis. Approximately, 2% of total tumors are located on the scalp, most of the them (80%) are benign while (20%) are malignant.[1] While only approximately 1–2 % of all scalp tumors are malignant, they comprise up to 13 % of all malignant cutaneous neoplasms.[5] Only few articles regarding the histology of scalp lesions could be found in the literature.[6] Present study aims at Clinicopathological correlation of scalp lesions with the help of simplified, informative technique of scalp

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biopsy.

MATERIAL AND METHODS

Present study was Descriptive observational study, conducted in Department of Pathology and Department of Dermatology, at Vilasrao Deshmukh Government Medical College, Latur, India. Study duration was of 2 years (July 2018 to June 2020). Study approval was obtained from institutional ethical committee.

Inclusion criteria: All the patients with scalp lesions who are voluntarily willing for scalp biopsy procedure.

Exclusion criteria: Children less than 10 years, pregnant females, Patients with bleeding and keloidal tendencies. Patients of non-scarring alopecia and patients without any visible scalp lesion. Patients not willing for scalp biopsy procedure.

Study was explained to patients in local language & written consent was taken for participation & study. The detailed information of each patient including name, age, sex, occupation, MRD no, along with Clinical history, findings, necessary investigations were retrieved and noted in a prescribed proforma. Photographs of the scalp lesion were taken for clinicopathological correlation with due consent of the patient. The scalp biopsy specimens were obtained by 'Ho-Vert Technique' under Local anaesthesia with 2% Lignocaine and adrenaline which combines both horizontal and vertical sections, under all aseptic precautions in the minor OT of Dermatology OPD.

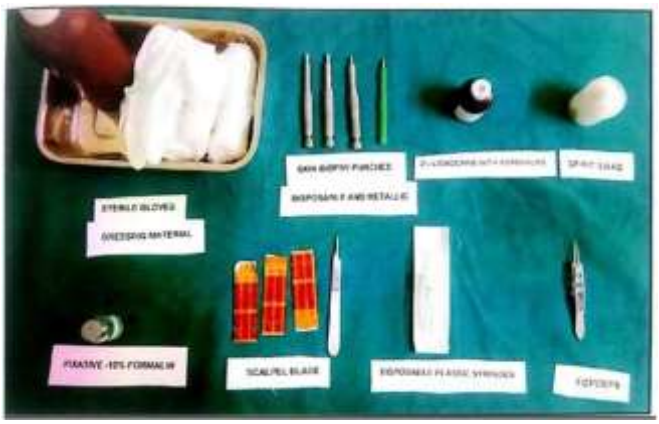

Figure 1: Materials required for scalp biopsy

Gross examination of the scalp biopsy specimens received in the department of Pathology was carried out. Tissue was processed routinely by fixing the specimen in 10% formalin followed by paraffin embedding. Tissue sections of 4–5-micron thickness was obtained and stained with Hematoxylin and Eosin. Detailed study of the sections was done by light microscopy. For light microscopy one slide from each block was routinely stained with H and E to arrive at a diagnosis.

Scalp lesions were divided into non-neoplastic and neoplastic lesions. Neoplastic lesions further divided as benign and malignant lesions. Variables used in study were age, gender, clinical and gross features, histopathological features.

Data was collected by using a structure proforma. Data entered in MS excel sheet and analysed by using SPSS 24.0 version IBM USA. Qualitative data will be expressed in

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terms of proportions. Quantitative data will be expressed in terms of Mean and Standard deviation. Association between two qualitative variables will be seen by using Chi square/ Fischer's exact test. Descriptive statistics of each variable will be presented in terms of Mean, standard deviation, standard error of mean. A p value of <0.05 will be considered as statistically significant whereas a p value <0.001 was considered as highly significant.

RESULTS

We included total 60 patients of scalp lesions, majority of the patients were from 31-40 years and above 60 years age group (21.7 % each), followed by from 21-30 years and 41-50 years age group (16.7% each). Mean age of the study population was 42.9±18.36 years. Out of 60 patients, males were 34 (56.78%) and females were 26 (43.3%), male to female ratio as 1.3:1. In majority of the cases the site of lesion was parietal area (56.7%) followed by frontal (21.7%), temporal (20%) and occipital location (15%). Majority lesions were on left side (50%), followed by right side (43.3%) and bilateral (6.7 %)

Table 1- General characteristics

Sr. No.	Characteristics	No. of patients	Percentage
1	**Age groups (in years)**		
1.a	11_20	8	13.3%
1.b	21-30	10	16.7%
1.c	31-40	13	21.7%
1.d	41-50	10	16.7%
1.e	51-60	6	10.0%
1.f	> 60	13	21.7%
2	**Gender**		
2.a	Female	26	43.3%
2.b	Male	34	56.7%
3	**Site**		
3.a	Frontal region	13	21.7%
3.b	Parietal region	34	56.7%
3.c	Temporal region	12	20.0%
3.d	Occipital region	9	15.0%
4	**Laterality**		
4.a	Bilateral	4	6.7%
4.b	Left	30	50.0%
4.c	Right	26	43.3%

Lesion was single in 55 cases (91.7 %) and multiple in 5 cases (8.3%). Clinical features of the lesion revealed pain in majority of the patients (48.3%) followed by discharge (18.3%), intermittent bleeding (16.7 %), swelling (8.3%), patches of hair loss (3.3%) and itching (1.7%). Out of 60 lesions, majority were neoplastic i.e., 58 (96.7%)

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and remaining were non-neoplastic i.e., 2 (3.3%) Out of 58 neoplastic lesions, majority were benign i.e. 55 (91.7%) and remaining were malignant i.e. 3 (5%).

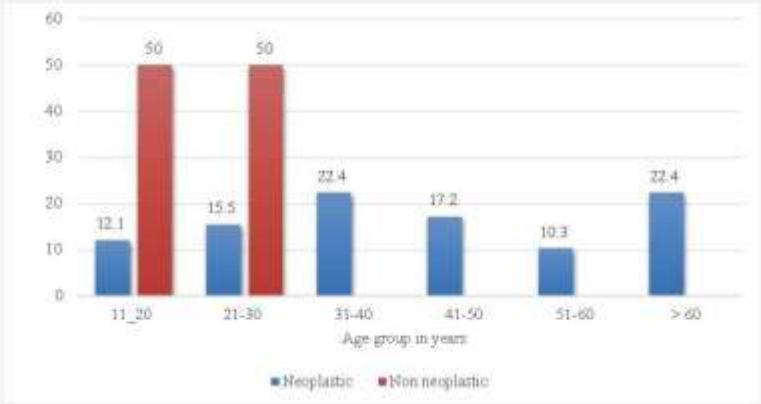

Figure 2: Bar diagram showing distribution of lesions according to age Table 2: Clinical & Histopathological Characteristics

Clinical diagnosis of the majority lesions revealed epidermal cyst (43.3%) followed by lipoma (10%) & Sebaceous Cyst/Trichilemmal Cyst/ Wart (5 % each). Histopathological diagnosis of the lesions revealed Trichilemmal Cyst (16.7%) in majority cases followed by, epidermal cyst (11.7 %), lipoma (10 %), dermoid cyst and epidermal inclusion cyst (8.3% each).

Report of histopathological and clinical diagnosis correlation revealed 100% correlation in Basal Cell Carcinoma, Epidermal Cyst, Hypohidrotic Ectodermal Dysplasia, Metastasis from PTC, Poorly Differentiated SCC and Syringocystadenoma Papiliferum. It is followed by 83.3% correlation in lipoma cases. We found no correlation of histopathology with clinical diagnosis in Compound Nevus, Epidermal Inclusion Cyst, Infected Dermoid Cyst, Infected Epidermal Cyst, Infected Epidermal Inclusion Cyst, Infected Sebaceous Cyst, Neurofibroma, Nevus Sebaceous, Proliferating Trichilemmal Cyst, Pseudopelade of Brocq, Sebaceous Cyst and Seborrheic Keratosis.

Table 3: Distribution according to histopathological and clinical diagnosis correlation

HISTOPATHOLOGICAL DIAGNOSIS	Total Cases	Clinical and Histopathological Correlation	Percentage
Epidermal Cyst	7	7	100.0%
Hypohidrotic Ectodermal Dysplasia	1	1	100.0%
Metastasis from PTC	1	1	100.0%
Basal Cell Carcinoma	1	1	100.0%
Poorly Differentiated SCC	1	1	100.0%
Syringocystadenoma Papiliferum	1	1	100.0%
Lipoma	6	5	83.3%

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A-V Malformation	2	1	50.0%
Trichilemmal Cyst	10	3	30.0%
Capillary Hemangioma	4	1	25.0%
Dermoid Cyst	5	1	20.0%
Epidermal Inclusion Cyst	5	0	0.0%
Sebaceous Cyst	4	0	0.0%
Compound Nevus	2	0	0.0%
Neurofibroma	2	0	0.0%
Infected Dermoid Cyst	1	0	0.0%
Infected Epidermal Cyst	1	0	0.0%
Infected Epidermal Inclusion Cyst	1	0	0.0%
Infected Sebaceous Cyst	1	0	0.0%
Nevus Sebaceous	1	0	0.0%
Proliferating Trichilemmal Cyst	1	0	0.0%
Pseudopelade of Brocq	1	0	0.0%
Seborrheic Keratosis	1	0	0.0%
Total	60	23	38.3%

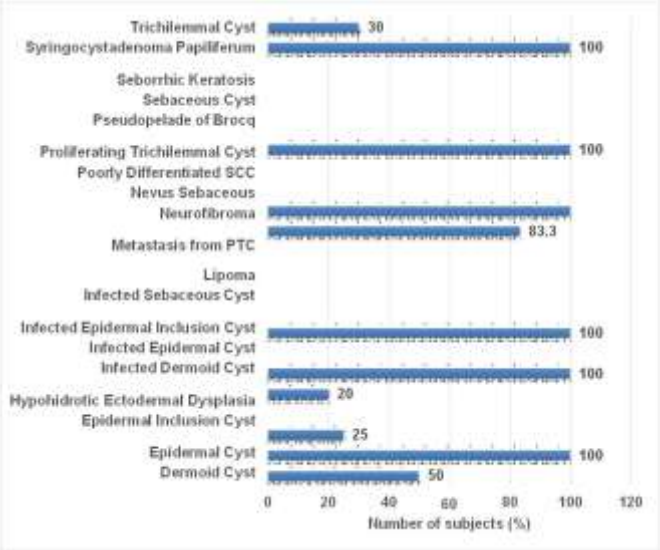

Figure 3: Bar diagram showing distribution according to histopathological and clinical correlation

Out of 58 cases of neoplastic lesions, majority of the patients belong to 31-40 years age group and above 60 years age group (22.4% each), followed by 41-50 years age group (17.2 %) and from 21-30 years age group (15.5 %). We found no significant association between type of lesion and age group ($p > 0.05$)

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Table 4: Distribution of lesions according to Type of lesion and Age Group

Age group in years	Neoplastic		Non-neoplastic		Total
	Frequency	Percentage	Frequency	Percentage	
11_20	7	12.1%	1	50.0%	8
21-30	9	15.5%	1	50.0%	10
31-40	13	22.4%	0	0.0%	13
41-50	10	17.2%	0	0.0%	10
51-60	6	10.3%	0	0.0%	6
> 60	13	22.4%	0	0.0%	13
Total	58	100.0%	2	100.0%	60

Chi square test-4.91, p-0.42(>0.05), Not significant

Proportion of males having neoplastic lesions were 56.9% as compared to 50% males with non-neoplastic lesions. Proportion of females having neoplastic lesions were 43.1% as compared to 50% females with non-neoplastic lesions. We found no significant difference in the proportion of cases between neoplastic and non-neoplastic group. (p>0.05)

Table 5: Distribution of lesions according to Type of Lesion and Gender

GENDER	Neoplastic		Non-neoplastic		Total
	Frequency	Percentage	Frequency	Percentage	
Female	25	43.1%	1	50.0%	26
Male	33	56.9%	1	50.0%	34
Total	58	100.0%	2	100.0%	60

Chi square test-8.78, p-0.55(>0.05), Not significant

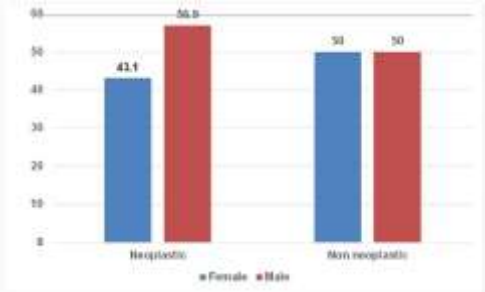

Figure 4: Bar diagram showing genderwise distribution of histopathological diagnosis

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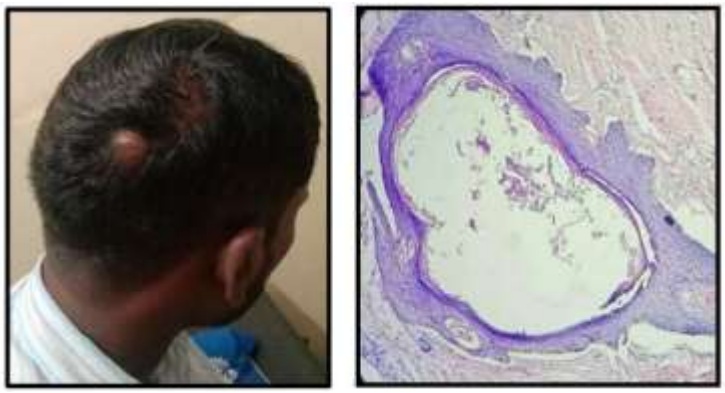

Fig. 5.1: EPIDERMAL CYST Fig. 5.2: EPIDERMAL CYST

Figure 5.1: Clinical picture showing cyst over occipital region, right side.

Figure 5.2: 10X Microscopy showing cyst wall lined by stratified squamous epithelium with granular layer. Cyst contents composed of keratin flakes.

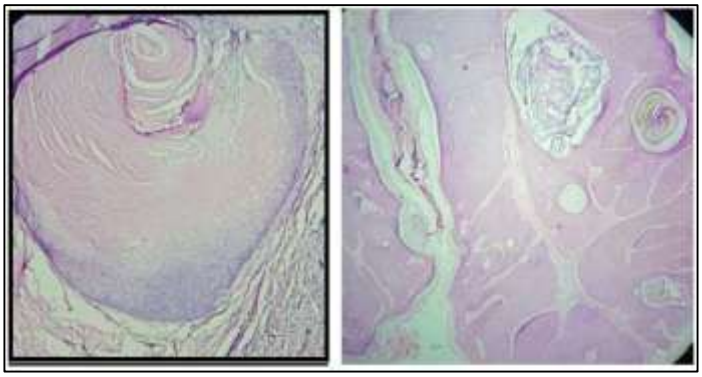

Fig. 6: TRICHILEMMAL CYST Fig. 7: SEBORRHIC KERATOSIS

Figure 6: 10X Microscopy showing cyst wall lined by stratified squamous epithelium, without granular layer (showing trichilemmal differentiation). Cyst contents showing abundant lamellated keratin.

Figure 7:10X Microscopy showing lining of stratified squamous epithelium showing acanthosis and hyperkeratosis.
Multiple horn cysts and one horn pseudocyst visible which is communicating with surface.

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Fig 8.1: PSEUDOPELADE Fig. 8.2: PSEUDOPELADE OF BROCQ OF BROCQ

Figure 8.1: Clinical picture showing 'Ivory white' patches of hair loss, without erythema.

Figure 8.2: 10X Microscopy showing epidermis lined by stratified squamous epithelium. Dermis showing columns of fibrosis replacing hair follicles.

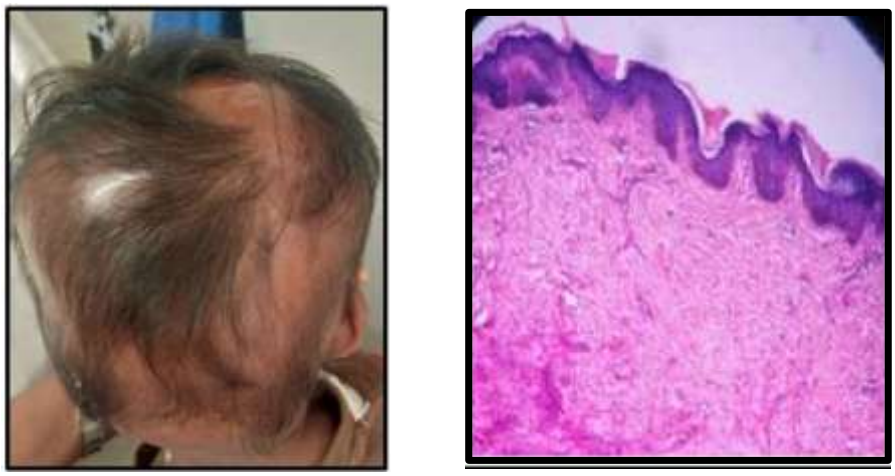

Fig. 9.1: HYPOHIDROTIC ECTODERMAL DYSPLASIA
Fig. 9.2: HYPOHIDROTIC ECTODERMAL DYSPLASIA

Figure 9.1: HYPOHIDROTIC ECTODERMAL DYSPLASIA
Clinical picture showing patches of hair loss over parieto-occipital region.

Figure 9.2: HYPOHIDROTIC ECTODERMAL DYSPLASIA
10X Microscopy showing epidermis lined by stratified squamous keratinised epithelium. Dermis showing reduced number of sebaceous glands and hair follicles.

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DISCUSSION

Although the incidence of tumors arising on the scalp is increased compared to those occurring elsewhere on the skin, these neoplasms are fortunately predominantly benign. Cysts constitute over 50 % of benign scalp tumors and primarily include trichilemmal, epidermoid and dermoid cysts; the estimated prevalence in the Western population is roughly 20 %.[7] Not least because of the high density of sebaceous glands, the scalp is the most common site of trichilemmal cysts,

accounting for approximately 80 % of such lesions. There are numerous other benign scalp tumors such as lipoma, fibroma, pilomatricoma (calcified cyst), seborrheic keratosis, nevi, hemangioma, warts and pseudolymphoma. [8]

Benign lesions comprise epidermal inclusion cyst, pilar cyst, dermoid cyst, lipoma, capillary hemangioma, intradermal nevus, verruca vulgaris[1] while malignant lesions include squamous cell carcinoma, basal cell carcinoma, melanoma and metastasis from the other sites.[7] Variety of Vascular tumours can also be seen in the scalp, head and neck being their most common site.[9] Cutaneous adnexal tumors are uncommon neoplasms, but head and neck regions are the most common locations of them. [10]

Annapurna V. Mane et al.,[11] reported in their study patient's age ranged from 6 months to 60 years with the mean age being 30.5 years which is comparatively less. The sex distribution of scalp lesions in the present study was slightly greater in men accounting for 44 (57.1%) cases, and 33 cases in female accounting for 42.9% of the total cases of 77. Adu EJ et al.,[12] also reported ages ranged from 16 to 70 years, with a mean age of 41.7 years with male to female proportion was 1.5:1.

Mean age in our study population was 42.9±18.36 years which is in discordance with a study conducted by Spitz et al.,[13] in which the age group ranged from 29 to 91 years, with a mean age of 61. The male to female ratio in our study was 1.3:1, Spitz et al.,[13] reported a similar sex distribution as ours.

In our study, out of 60 lesions, majority were neoplastic i.e., 58 (96.7%) and remaining were non-neoplastic i.e., 2 (3.3%). Out of 58 neoplastic lesions, majority were benign i.e., 55 (91.7%) and remaining were malignant i.e. 3 (5%). Hing way SR et al.,[14] studied 80 FNAB of palpable scalp lesions, both cutaneous and subcutaneous in location. There were 55 benign lesions, both neoplastic and non- neoplastic, and 14 malignant ones.

In our study, Histopathological diagnosis of the lesions revealed Trichilemmal Cyst in 10 cases i.e., 16.7%, epidermal cyst in 7 patients i.e. 11.7%, lipoma in 6 cases i.e. 10%, dermoid cyst and epidermal inclusion cyst (8.3%) and Capillary Hemangioma as well as Sebaceous Cyst (6.7 % each). Annapurna V. Mane et al.,[11] reported in their study that benign lesions were the commonest (54.5%) with majority being keratinous cysts (epidermal cysts 35.7% and trichilemmal cysts 64.3%), lipoma and vascular lesions (capillary hemangioma 44.4% and pyogenic granulomas 33.3%). Keratinous cyst (54.5%) was the most common benign lesion in our case.

Mukul Singh et al.,[15] reported that out of the 185 cases, 178 were benign and 7 were malignant lesions. The commonest lesions were keratin cysts (50%), which included epidermal inclusion cysts/ trichilemmal cysts/dermoid cysts, followed in frequency by lipoma (17.9%), nonspecific cystic lesion (5.5%), benign adnexal lesions (3.9%),

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fibrohistiocytic lesions (2.8%), mesenchymal tumors (4.498%) and hematomas (3.37%).

In the study by Leena et al.,[16] they found 32.6% cases of keratinous cysts (most common), 10.9% cases of lipoma and 21.7% cases of vascular lesions. This is in concordance with our study. Hingway SR et al.,[14] also reported keratinous cysts, including epidermal and pilar cysts, as the commonest lesions diagnosed among scalp lesions.

Chaudhary PK et al.,[17] reported that among the 65 cases, 38 (58%) cases were benign lesions. The male to female proportion was 1.5:1. Among benign, conditions like Pilar cyst/ Trichilemmal cyst (16.9%), Epidermoid cyst (12.3%), keratinous cyst was most conspicuous

and small portion were malignant Squamous Cell Carcinoma (3.07%), Metastatic adenocarcinoma, Pigmented basal cell carcinoma and Adenoid basal cell carcinoma 1.5% each.

In our study, out of 60 lesions, majority were neoplastic i.e., 58 (96.7%) and remaining were non-neoplastic i.e., 2 (3.3%). Out of 58 neoplastic lesions, majority were benign i.e., 55 (91.7%) and remaining were malignant i.e. 3 (5%). Annapurna V. Mane et al.,[11] reported total malignancies constituted 2.59% of all the cases which is consistent with our study findings.

V. Mane et al[69] reported squamous cell carcinoma was the most common malignancy among all malignant tumors of scalp. They found only two cases of malignant scalp tumors both of them

were squamous cell carcinoma.

Present study findings correlated with the studies carried out by Leena et al.,[16] and Adu EJK et al.,[12] Another study by Manchanda et al.,[18] found that basal cell carcinoma was more common than squamous cell carcinomas and was seen in elderly patients was comparable with our study. We had 6 cases of Lipoma accounting for 10% of all scalp lesions. This finding was comparable to study carried out by Truhan et al.,[19] Carson et al.,[20] and Spitz et al.,[13] who reported lipoma cases as 5.5% and 2.8% cases respectively of lipoma in their study of scalp lesions, there was a slight discordance in the incidence of our study and these two studies.

Report of histopathological and clinical diagnosis correlation revealed 100% correlation in Basal Cell Carcinoma, Epidermal Cyst, Hypohidrotic Ectodermal Dysplasia, Metastasis from PTC, Poorly Differentiated SCC and Syringocystadenoma Papiliferum. It is followed by 83.3% correlation in lipoma cases. We found only 25% correlation of capillary hemangiomas in our study. Annapurna V. Mane et al.,[11] reported that out of the 9 cases reported, 7 cases (77.8%) were classified as vascular tumors which included hemangioma and 2 cases (22.2%) were classified as vascular malformations (Arterio-Venous Malformation) which is not matching with our study findings. Our findings did not correlate with other studies done by Ramani et al.,[21] and Adnani et al.,[22] In the study by Ramani et al.,[21] of the 44 cases reported, 39 cases were classified as vascular tumours which included hemangioma and 5 as vascular malformations which included lymphangiomas. Our results were inconsistent with available literature. Lesions of scalp

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are neglected initially, until they become significantly noticeable, which then affect person's confidence and self-esteem. So, knowledge and awareness about scalp lesions is must for early diagnosis and treatment. Scalp biopsy by Ho-Vert technique is simple, informative, less time-consuming technique for accurate histopathological diagnosis of scalp lesions.

CONCLUSION

In the present study, majority were benign lesions, among which trichilemmal cysts and epidermal cysts were most common lesions. Malignant lesions included squamous cell carcinoma and basal cell carcinoma. Visible scalp lesions and alopecia affect individual's self esteem and confidence. Most of the scalp lesions are indistinguishable clinically, so they are the most neglected at early stage**,** so histopathological correlation is must for accurate diagnosis. Further largescale researches should be conducted for conclusive results.

REFERENCES

1. Kilitci A, Asan Z. Histopathological Profile of Surgically Excised Scalp and Skull Lesions. Cyprus J Med Sci 2018; 3:63-7.
2. Elewski BE. Clinical diagnosis of common scalp disorders. J Investig Dermatol Symp Proc. 2005 Dec;10(3):190-3. doi: 10.1111/j.1087-0024.2005.10103.
3. Kibar M et al. Dermatoscopic findings in scalp psoriasis and seborrheic dermatitis; Two new signs; Signet ring vessel and Hidden hair. Indian j Dermatol. 2015;60(1):41-5.
4. Phiske MM. Scalp psoriasis: A brief overview. J Cosmo Trichol.2016;2(2):110.
5. Anrade P et al. Epidemiology of basal cell carcinomas and squamous cell carcinomas in a Department of Dermatology: a 5-year review. A Bras Dermatol 2012; 87(2):212–9
6. Sornakumar L. et al. correlation between clinical, histopathological and direct immunofluorescence findings in cases of cicatricial alopecias. Int J Res Dermatol. 2016;2(4):99-102.
7. Al-khateeb TH, Al-Masri NM , Al-Zoubi F . Cutaneous cysts of the head and neck . J Oral Maxillofac Surg 2009 ; 67 : 52 – 7 .
8. Türk CÇ, Bacanlı A , Kara NN . Incidence and clinical significance of lesions presenting as a scalp mass in adult patients. Acta Neurochir 2015; 157 (2): 217–23.
9. Kalyani D et al. Histopathological study of vascular lesions. IOSR J Dental Med Sci. 2017;16(11):47-52.
10. Bhat SP et al. clinicopathological study of cutaneous adnexal tumors in a tertiary hospital of
11. South India. Indian J Pathol Oncol. 2016;3(4):649-652
12. Annapurna V. Mane, Lalita Y. Patil, Sandip B. Jadhav. Histopathological analysis of scalp lesions: five years retrospective study of Western India. International Journal of Contemporary Medical Research 2017;4(7):1500-1503
13. Adu EJ. Tumours of the scalp: a review of ten cases. J US China Med Sci. 2013;10:57-

ISSN: 0975-3583, 0976-2833 VOL13, ISSUE7, 2022

62.
14. Spitz DJ, Reddy V, Selvaggi SM, Kluskens L, Green L, Gattuso P. Fine-needle aspiration of scalp lesions. Diagn Cytopathol. 2000;23:35-8.
15. Hingway SR, Kodate P. Cytodiagnosis of scalp lesions. J Med Sci Health 2015;1(1):1-9.
16. Mukul Singh, Charanjeet Ahluwalia of Recent Trends in Science and Technology.July 2016; 19(3): 433-436
17. Leena et al. A histopathological review of scalp tumors: Hospital based study. International Journal of Recent Trends in Science and Technology. 2014;12:256- 8.
18. Chaudhary PK. Histopathological Analysis of Scalp Lesions. 2017; 27:7-5.
19. Manchanda Y KE, Al-Mutairi N. A clinico-pathological-epidemiological study of non- Melanoma malignant skin tumors of the scalp. The Gulf Journal of Dermatology and Venereology. 2012;19:22-7.
20. Truhan AP, Garden JM, Caro WA, Roenigk HH, Jr. Facial and scalp lipomas: case reports and study of prevalence. J Dermatol Surg Oncol. 1985;11:981-4.
21. Carson HJ, Gattuso P, Castelli MJ, Reddy V. Scalp lesions. A review of histopathologic and fine-needle aspiration biopsy findings. Am J Dermatopathol. 1995;17:256-9.
22. M Ramani KWH, K Geetha, K Ramesh Reddy, P Sreenivasa Reddy, Ramsha Tahoor A, Puja Deshmukh. Histopathologist's outlook of vascular lesions in children - a 2 year study. Journal of Evolution of Medical and Dental Sciences. 2013;2:6415-21.
23. Al-Adnani M, Williams S, Rampling D, Ashworth M, Malone M, Sebire NJ. Histopathological reporting of paediatric cutaneous vascular anomalies in relation to proposed multidisciplinary classification system. J Clin Pathol. 2006;59:1278-82.