



## FINE NEEDLE ASPIRATION CYTOLOGY AS AN INITIAL DIAGNOSTIC AID FOR PRIMARY EVALUATION OF HEAD-NECK PATHOLOGY: FIVE INTERESTING CASES WITH UNUSUAL CLINICAL IMPLICATIONS

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### ABSTRACT

Fine Needle Aspiration Cytology is now-a-days the preferred diagnostic modality in primary investigation of Head-neck Pathology, especially for that of parotid and thyroid lesions. However, FNAC finding some time reveals such phenomenal findings, which lies outside even in the wildest realm of imagination, both in case of pathologist and the clinician. Five of such unusual cases are described here, each one having peculiar clinical presentation with cytology findings posing considerable diagnostic challenge.

**KEYWORDS :** Melanoma, parotid neoplasm, FNAC, Rosai-Dorfman disease, Carcinoma-ex-pleomorphic adenoma, Granuloma, Hodgkin disease, cystic metastasis of squamous cell carcinoma.

### INTRODUCTION:

Fine Needle Aspiration Cytology is now-a-days the preferred diagnostic modality in primary investigation of Head-neck Pathology, especially for that of parotid and thyroid lesions, where core needle biopsy is usually not undertaken. In fact, Tuberculous lymphadenitis or evidence of metastatic deposit in a neck node, are routinely confirmed by FNAC in day-to-day's practice, which is a cheap, less invasive procedure with rapid obtainment of result, as compared against histopathological examination. However, FNAC finding some time reveals such phenomenal findings, which lies outside even in the wildest realm of imagination, both in case of pathologist and the clinician. Five of such unusual cases are described here, each one having peculiar clinical presentation with cytology findings posing considerable diagnostic challenge.

### Case Details:

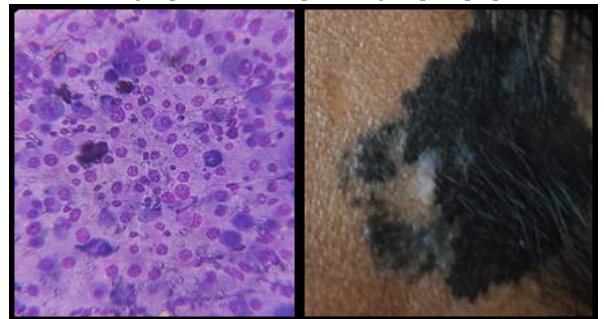
1) A 36 year old male presented with a firm left sided preauricular swelling in the parotid region, fixed to the underlying structures, for 3 months. History revealed that he experienced an acute episode of earache 3 months back, for which a course of antibiotic was administered. A small swelling appeared in the area, which gradually enlarged following that episode and subsequently transformed into a firm-hard swelling after a repeat course of antibiotic. The history, so far obtained suggested towards formation of a Bezold's abscess, transforming into antibioma, as a complication of Acute Suppurative Otitis media; although, an episode of ASOM, in this age group, is quite unusual phenomenon.

An FNAC was performed, and at the same time, an ultrasonogram or similar imaging study was advised. The smears show a very high cellular yield comprising individually dispersed neoplastic cells with marked atypia in a background of necrosis. The cells have ample amount of basophilic cytoplasm with brownish intracytoplasmic pigment and marked degree of nuclear pleomorphism with prominent nucleoli- accompanied by numerous bizarre looking multinucleated giant cells ( Fig 1a). The cytomorphological picture was that of a classical melanoma, but we hesitated to disclose the diagnosis, considering the patient's age, its location and its ominous prognosis. No apparent primary lesion was obvious, from which we can

suspect a metastasis to the preauricular, parotid group of lymph node. The clinician was also reluctant to consider the diagnosis, especially when, the imaging misled to a possibility of primary neoplasm of Parotid.

So, in the next visit, we performed another aspiration, and the specimen was sent for cell block preparation and Immunohistochemistry. This time, the patient was closely examined by us, and we discovered a dark nevus in the forehead, at the same side; hidden beneath the hairline. But the patient informed us that it is present since his birth, and he did not notice any apparent change in it in years.

On closer inspection, one corner of the lesion showed an evolving area with irregular border, variegation in colour accompanied with satellite nodules ( Fig 1b),- in all probability, pointing towards the emergence of an invasive melanoma in a background of congenital nevus. The biopsy revealed that the case is so indeed, and also the immunohistochemistry performed on the cell block showed strong s-100 positivity. So, the final diagnosis was that of melanoma arising in background of congenital nevus, metastasizing to pre auricular, parotid group of lymph nodes.

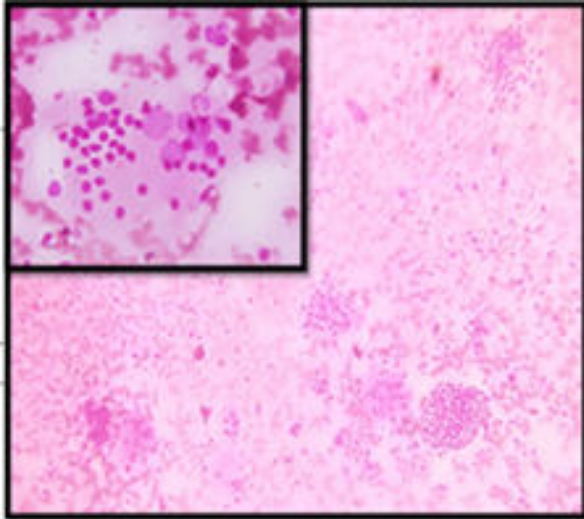


**Fig 1a:** cytology of FNA from preauricular swelling

**Fig 1b:** Skin lesion on forehead

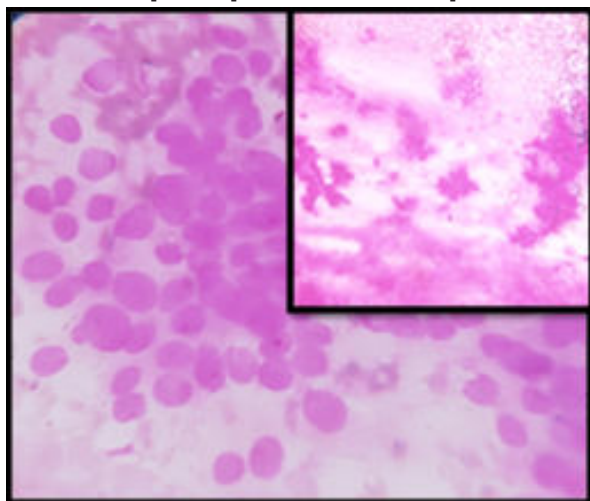
2) A 30 years old male presented with large swelling in posterior triangle of neck measuring 5x4x3 cm without any apparent complaint of two and half months. No history of fever was there, neither there was any history of weight-loss. The FNAC showed lymphoid cells with predominance of mononucleate and multinucleated histiocytes with emperipolesis

of small mature lymphocytes ( Fig 2). The diagnosis in favour of sinus histiocytosis with massive lymphadenopathy/ Rosai Dorfman disease was offered, which was later confirmed on histopathology.



**Fig 2:** Cytology Findings In Case 2 (inset: Histiocyte With Emperipolesis Of Small Lymphocytes)

3) A 58 year old man presented with enormous parotid swelling of 8x4x3 cm dimension with overlying surface ulceration, which originated 10 years back. Detailed history revealed, it was 4x3x2 cm few months before; only within last eight weeks it has evolved rapidly. Smear showed high cellular yield comprising abundant chondro-myxoid stroma of striking magenta colour with large clusters of atypical epithelial cells admixed with necrosis (Fig 3). A report suggestive of Carcinoma-ex-pleomorphic adenoma was despatched.

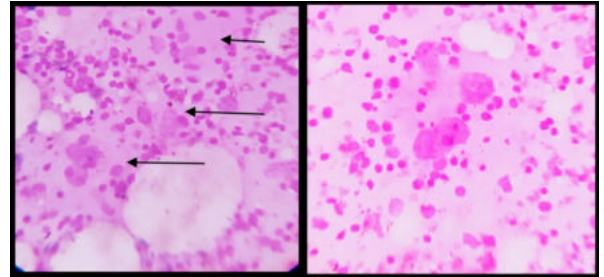


**Fig 3:** Atypical Epithelial Cells In Aspirate (inset: Magenta Coloured Chondro-myxoid Stroma)

4) A 22 year old lady of low socio-economic condition, presented with two firm, rubbery nodes in the posterior triangle of neck, measuring 2.5x2 cm each. On history, significant weight loss in the last three months along with episodic fever was obtained. So, we were ready to diagnose another unfortunate case of Tuberculosis in a young lady, especially when she revealed that her father was diagnosed to be suffering from Tuberculosis 4 months earlier.

Indeed, ill-formed epithelioid granulomas were present in the smear ( Fig 4a), but the characteristic necrotic background of Koch's was absent. Moreover, the cells were polymorphous

with presence of plasma cells, immunoblasts and very large mononuclear and binuclear cells, with abundant amphophilic cytoplasm, enormous nucleus and conspicuous eosinophilic nucleolus (Fig 4b). A report suggestive of Hodgkin Lymphoma was issued, which was later confirmed by excisional biopsy and histopathology.

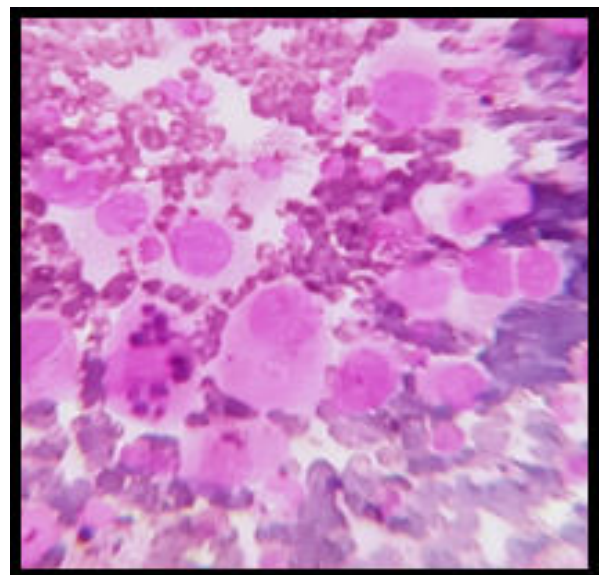


**Fig 4a:** Ill Formed Granuloma **Fig 4b:** Binucleate Hodgkin like cells in aspirate

5) A 52 year old male presented with a firm, mildly tender, cystic swelling, in the right anterior triangle of neck, emerging in last two months. No apparent complaint was there, except weight loss in the last three months without any episode of fever. On FNAC, 3.5 ml of turbid, haemorrhagic fluid was obtained, which was centrifuged and then smear was made from it.

Smear showed necrotic material, haemorrhage, numerous cyst macrophages admixed with acute inflammatory cells. However, on closer examination, occasional atypical cells were found within the smear.

On the next visit, again 2.5 ml of fluid aspirated from the swelling; but this time, further needling was done after complete evacuation. The smear revealed presence of highly pleomorphic squamous cells with nuclear hyperchromasia, prominent nucleoli in a necrotic background (Fig 5)-suggestive of nodal metastasis of SCC with gross cystic degeneration. Triple endoscopy was undertaken soon and an ulceroproliferative growth was discovered in the subglottis.



**Fig 5:** Pleomorphic Squamous Cells In Necro-haemorrhagic Background (case 5)

#### DISCUSSION:

1) Melanoma , regarded as an aggressive tumour of skin, is notorious for its propensity for heterogenous presentation; particularly it can mimic any neoplasm encountered in day to day's practice<sup>1</sup>. The classical morphology comprising highly pleomorphic neoplastic cells with conspicuous eosinophilic

nucleoli (often accompanied with macronucleoli) with evidence of intra-cytoplasmic melanin pigment production<sup>2</sup>; as in this scenario, may not be the case always. Often, the diagnosis of amelanotic melanoma depends on immunohistochemical examination with demonstration of S-100, HMB-45, Melan-A positivity.

Recent WHO classification has tried to categorize the melanocytic neoplasm based on the cumulative sun damage as evidenced by solar elastosis<sup>3</sup>. Also a pathway concept has been endorsed, where, different sets of genetic aberrations are assigned to a particular group of melanoma<sup>3</sup>.

Primary tumour of salivary gland always comes to the first consideration while dealing with swelling in parotid region, however chance of metastasis in the parotid group of lymph nodes should always be borne in mind. Especially, deposit from squamous cell carcinoma often generates awesome problem differentiating it from high grade mucoepidermoid carcinoma<sup>1</sup>. Yeung et al<sup>4</sup> reported a case of parotid gland mass as an initial metastatic manifestation of nasopharyngeal carcinoma.

Similar cases of metastatic melanoma mimicking a primary parotid neoplasm were reported by Bartholome W<sup>5</sup>, Laudadio P et al<sup>6</sup>. Lajara S et al<sup>7</sup>, reported a case of metastatic malignant melanoma which simulated a salivary gland basaloid neoplasm, while following up a known case of melanoma, who was being treated with Nivolumab. In many cases, the primary focus remained undiscovered<sup>8</sup> or found to be regressed<sup>9</sup>. In any case, as such, thorough examination of the drainage area especially anterior two thirds of scalp as well as the conjunctiva is warranted ( Uveal melanoma usually metastasizes to visceral organs, metastasis to loco-regional nodes is, a bit, uncommon).

Once having uniformly poor prognosis, the melanoma cases are recently treated with novel targeted therapies. Our patient was referred to Medical oncology department for establishing appropriate chemotherapeutic regimen, and currently is under treatment.

2) Rosai Dorfman disease, also known as sinus histiocytosis with massive lymphadenopathy, is a disease of unknown etiology usually found in young adults. Smear often shows large histiocytes with intracytoplasmic lymphocytes (lymphohagocytosis). The disease may remain localized, may involve other extra-nodal sites, and sometimes undergoes spontaneous remission. Rajyalakshmi R et al<sup>10</sup> reported a series of 12 cases highlighting the diagnostic challenges. A similar case in an elderly lady is reported by Aziz M et al<sup>11</sup>.

3) Pleomorphic salivary adenoma, the most common neoplasm of major salivary glands are usually easily diagnosed on smear on identification of bright, magenta coloured chondro-myxoid stroma. Carcinoma ex pleomorphic adenoma, though not very frequent, usually runs an aggressive course as the malignant component often resembles that of salivary duct carcinoma. Inadequate sampling in such cases is a real problem and often leads to disastrous consequences. Khanna D et al<sup>12</sup> and Yamada S et al<sup>13</sup> have elaborated two such cases like ours.

4) Not every granuloma leads to the diagnosis of Koch's disease, even when the patient belongs to a low socio-economic stratum, or the pathologist is accustomed to encounter this disease regularly, as the case may be in country like India. Metastatic malignancy like seminoma may present with florid granulomatous reaction. Hodgkin Lymphoma and Peripheral T cell lymphoma often presents with exuberant granulomatous reaction, even upto such

extent, that the underlying pathology may get obscured. Du J et al<sup>14</sup> and Al Maghrabi JA et al<sup>15</sup> reported similar cases of Hodgkin disease like ours.

5) Benign cystic swelling of neck in older age group is a very uncommon finding. It is to be borne in mind that some aggressive cancers, especially squamous cell carcinomas are notorious for cystic degeneration. Reaugar et al<sup>16</sup> suggested that any cystic lesion of head-neck arising in elderly age group should be suspected for malignancy, unless proved otherwise. Goldenberg D et al<sup>17</sup>, speculated that if the SCCs presenting with cystic metastasis represent a distinct subgroup of Head-neck SCCs.

Whenever, a cystic swelling is encountered it is prudent to perform through sampling from the base of the cyst after evacuating the cyst fluid, otherwise, important clinical findings will be missed.

## CONCLUSION:

Five unusual cases, each one having peculiar clinical presentation with cytology findings are described here. It is apparent that Fine Needle Aspiration Cytology is a very efficient first line tool for primary evaluation of Head-neck Pathology. Considerably cheap and time-saving, if cautiously scrutinized and interpreted in appropriate clinical context; it can yield precious information valuable for therapeutic decision making.

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