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SRL Global Knowledge Forum
Expanding Horizons

PULSE

Technical Newsletter of SRL Limited

Dear Friends,

An important turning point in the lifespan of Pulse has been the inclusion of cases that the clinical and scientific staff come across in their profession. We have completed and accomplished ten issues since Case Reports became the heartbeat of Pulse!

The emails that we receive from you all give a kind of pulse that can be literally sensed. It not only bespeaks the scholarly minds that our organization has, but also testifies the trust we have on Pulse as a flag-bearer of our intellectual treasure.

In the In Focus section of this issue, we have Dr Arpita Roy Dam and team writing about two unique cases of Bombay Blood, a rare blood group with an incidence of 1 in 10,000 individuals in India and 1 in a million people in Europe. These samples were replicate EQAS samples which were misinterpreted and reported as 'O' blood group by a hospital, and were sent to SRL as a part of root cause analysis of their outliers.

In the Medical Case Reports section, we have cases ranging from a rare Hb variant, Hb Hofu, mixed connective tissue disease presenting with Raynaud's phenomenon, hybrid tumor of parotid gland, follicular dendritic cell sarcoma, salivary duct carcinoma, disseminated nocardiosis with cutaneous manifestations, rare sialoblastoma in a pediatric case, sialolipoma of parotid gland, persistent Mullerian duct syndrome, and giant cell tumour of tendon sheath - a common tumour at an uncommon site and unusual age.

Like always, we welcome your answers and inputs for the Brain Teaser section. Also, have a look at our Recent Activities in SRL. We invite your inputs for the Publication section as well.

I extend my earnest appreciation to all the contributors who have authored the articles and everyone who has supported directly or indirectly in making Pulse more engaging. I am sure you will find this issue an insightful read.

Wish you all a happy and prosperous 2018.

Dr. B. R. Das

Bombay Blood - A Rare Entity!

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Summary
We received the whole blood and serum samples of two cases in inter-lab result verification code for blood grouping from a hospital based laboratory. The blood group turned out to be a rare one - Bombay Group . The same was verified as Bombay Group by manual tube agglutination method.

Background
Bombay blood group is a rare blood type that was first discovered in a patient of Bombay (now Mumbai) in 1952. It is a rare condition and has been reported in 1 of 10,000 individuals in India and 1 in a million people in Europe. Carriers of Bombay blood group can be misinterpreted to have an O blood group; however, they suffer from a reaction if they are transfused with any other blood group including O blood.

From a laboratory perspective, Bombay Group being a very rare group, can be missed and misinterpreted as O blood group in absence of availability of anti-H sera in routine lab testing. The relevance of performing the reverse grouping with pooled O cells in possible O group samples can not be undermined.

Investigations
We perform our blood grouping by manual tube agglutination method at the Clinical Reference Laboratory, Gurgaon.

Forward grouping testing data of both samples –

- Anti-A sera – no agglutination
- Anti-B sera – no agglutination
- Anti-AB sera – no agglutination
- Anti-D sera – agglutination ++

Reverse grouping with serum sample received:-

- Pooled A cells – agglutination +
- Pooled B cells – agglutination +
- Pooled O cells – agglutination +

Upon getting agglutination with O cells we went ahead for performing a forward grouping with anti-H lectin sera in both the cases. There was no agglutination noted in both cases.

Outcome and Followup
The blood group reported out in both cases was Bombay group (Oh) with an Rh positive phenotype. These were duplicate samples sent in the EQAS of a hospital laboratory.

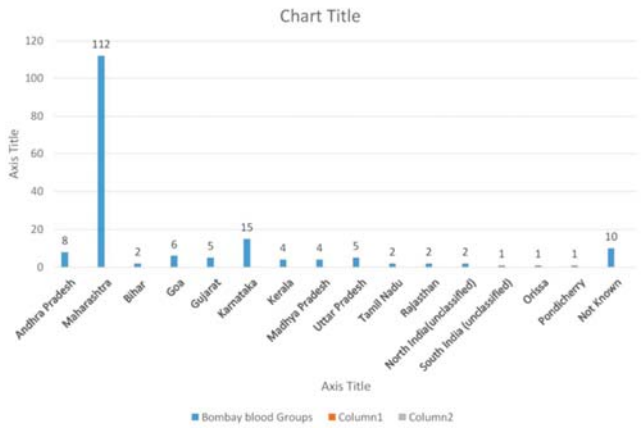
Retrospectively, we had the information that both these samples had been reported out as O positive and were outliers. This activity was a CAPA for the outliers.

Discussion
The first person that was discovered to have the Bombay phenotype was deemed to have an interesting blood type that reacted to other blood types in a way never seen before. The serum contained antibodies that reacted with all red blood cells (RBCs) with normal ABO phenotypes. The RBCs appeared to lack all of the ABO blood group antigens plus an additional antigen that was previously unknown.

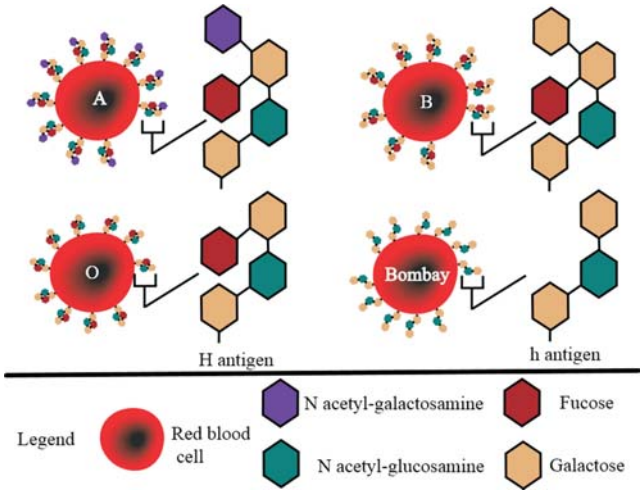
Individuals with the rare Bombay phenotype (hh) do not express H antigen (also called substance H), the antigen which is present in blood group O. As a result, they cannot make A antigen (also called substance A) or B antigen (substance B) on their red blood cells, whatever alleles they may have of the A and B blood-group genes, because A antigen and B antigen are made from H antigen. For this reason people who have Bombay phenotype can donate RBCs to any member of the ABO blood group system (unless some other blood factor gene, such as Rhesus, is incompatible), but they cannot receive blood from any member of the ABO blood group system (which always contains one or more of A and B and H antigens), but only from other people who have Bombay phenotype.

It is very important, in order to avoid any complications during a blood transfusion, to detect Bombay phenotype individuals because the usual tests for ABO blood group system would show them as group O. Since Anti-H immunoglobulins can activate the complement cascade, it will lead to the lysis of RBCs while they are still in the circulation, provoking an acute hemolytic transfusion reaction. This, of course, cannot be prevented unless the lab technologist who is involved has the means and the thought to test for Bombay group.

Incidence: Bombay blood group or HH Blood Group is a rare blood group type that was first discovered in a patient of Bombay (Mumbai), India in the year 1952.This very rare phenotype is generally present in about 0.0004% (about 4 per million) of the human population, though in some places such as Mumbai (formerly Bombay) locals can have occurrences in as much as 0.01% (1 in 10,000) of inhabitants and 1 in a million people in Europe.



Genetics: Patients who test as type O have the Bombay phenotype if they have inherited two recessive alleles of the H gene, (their blood group is Oh and their genotype is hh), and so they do not produce the H carbohydrate that is the precursor to the A and B antigens. It then no longer matters whether the A or B enzymes are present or not, as neither A nor B antigen can be produced since the precursor antigen H is not present. Because both parents must carry this recessive allele to transmit this blood type to their children, the condition mainly occurs in small closed-off



communities where there is a good chance of either of the parents having the Bombay group, or both, or being heterozygous for the h gene allele and so carrying the Bombay characteristic as recessive. Other examples may include noble families, which are inbred due to custom rather than local genetic variety. Studies have proved that incidence is higher in those states of India where consanguinity is a common practice.

Learning Points

- Blood grouping, especially for weaker and rare groups is extremely critical testing.
- Bombay Groups can be easily misinterpreted as group O .
- For all group O samples (on forward grouping), reverse grouping with pooled O cells is mandated.
- There would be no agglutination with pooled O cells reverse group in patients with O blood group.
- There would be agglutination with pooled O cells reverse group in patients with Bombay blood group.
- Keeping an inventory of anti-H sera is also mandated in such cases.
- Bombay Blood Group. Org - a national Bombay group registry with donor details.

References

1. Doctors Y.M. Bhende, C.K. Deshpande and H.M. Bhatia of the Seth Gordhandas Sunderdas Medical College, Mumbai published a note in The Lancet (May 3, 1952)
2. Transfusion reaction in a case with the rare Bombay blood group. Hayedeh Javadzadeh Shahshahani,1 Mohamad Reza Vahidfar,2 and Seyed Ali Khodaie3Asian J Transfus Sci. 2013 Jan-Jun; 7(1): 86–87
3. Prevalence of Bombay Group Blood in Southern Bengal Population. Biplabendu Talukder, Suvro Sankha Datta, Somnath Mukherjee, and Krisnendu Mukherjee. Indian J Hematol Blood Transfus. 2014 Sep; 30(3): 149
4. Oriol R, Canelier JJ, Mollicone R. Molecular genetics of H. Vox Sang. 2000; 78:105–108. [PubMed]

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Mixed Connective Tissue Disease Presenting With Raynaud's Phenomenon

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Summary
We describe a case of a 27 yr old female who presented with bluish discoloration of fingers of hands on exposure to cold/ low temperature; she had this symptom for past 1 yr. She also had complaint of skin tightness/thickening of fingers accompanied with pain in joints both upper and lower limbs with difficulty in opening of mouth and difficulty in swallowing too. She also had rashes on face on prolonged exposure to sun. All these symptoms developed over the last 6-8 months. Her routine investigations revealed normocytic normochromic anemia with raised ESR and CRP. Kidney and liver functions, and urine R/M were normal, USG abdomen and chest X-ray were also normal. Based on the clinical features and results of routine investigations, a provisional diagnosis of Limited Scleroderma was made. Further a complete autoimmune work up of the patient was sent to Gurgaon Reference Laboratory. The results of autoimmune investigations showed a strongly positive ANA and dsDNA on immunofluorescence. Subsequently antibodies against Extractable Nuclear Antigens were tested via immunoblot assay, the results showed a strong positive for U1RNP (ribonucleoprotein), Sm (smith), RIB(Ribosomal), Nu(Nucleosome), HI (Histone), Scl-70(Scleroderma). Based on the autoimmune work up and clinical correlation a final diagnosis of Mixed Connective tissue disease (MCTD) was made.

Introduction
MCTD is an overlap syndrome first defined by Sharp et al in 1972 as the disease which shared the features of Systemic Lupus Erythematosus, Scleroderma and Polymyositis. Most patients experience arthritis/ arthralgia, swollen hands and Raynaud's phenomenon.

There are different diagnostic criteria for MCTD –
Alarcon-Segovia Criteria: It includes
a) Serology (strong positive anti-U1RNP antibody)
b) Clinical Criteria –oedema of hands, synovitis, myositis, Raynaud phenomenon, acrosclerosis.

For diagnosis of MCTD: Positive serology with at least 3 of the above clinical features mentioned needs to be seen in a patient.

Kusukawa Criteria –It includes
a) Common Symptoms –swollen hands/ fingers, Raynaud phenomenon
b) Strong positive serology (anti-U1RNP antibody)
c) Mixed features of SLE, Scleroderma, Polymyositis

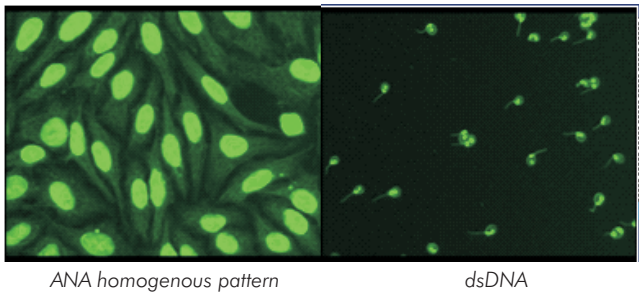
For MCTD diagnosis: At least 1 common symptom with positive serology with features of at least 2 of the 3 diseases mentioned needed.

Kahn Criteria – it includes
a) Serology (positive U1RNP) with ANA positivity
b) Clinical Features – Raynaud phenomenon, synovitis, myositis, swollen fingers

For MCTD diagnosis: Positive U1RNP with Raynaud phenomenon with 2 of the 3 rest of clinical features.

Case Presentation
A 27 yr old female presenting with bluish discoloration of fingers of hands on exposure to cold/ low temperature for past 1 yr, also complaints of skin tightness/thickening of fingers accompanied with pain in joints of both upper and lower limbs with difficulty in opening of mouth and difficulty in swallowing too. She also has rashes on face on prolonged exposure to sun. All these rest of the symptoms were seen over last 6-8 months.

Investigations
CBC: HB =11.2 gm/dl, TLC = 10,000/cumm, Plt = 1.70 Lakh/cumm, DLC =WNL, Smears/o normcytic normochromic anemia
ESR= 50mm1st hr, CRP =Raised, RA factor = negative, Anti CCP=WNL
KFT & LFT =WNL, Urine R/M =WNL
USG Abdomen = WNL, X-ray Chest =WNL
ANA = 1:1280, 4+, Homogenous, dsDNA = 1:10, 1+
ANA Reflex profile = U1RNP 3+, Sm 1+, RIB 3+, Nu 2+, HI 1+, Scl-70 3+



ANA homogenous pattern *dsDNA*

Differential Diagnosis
a. Systemic Lupus Erythematosus
b. Scleroderma (Systemic Sclerosis)
c. Raynaud's Phenomenon
d. Rheumatoid Arthritis
e. Polymyositis

Treatment and Outcome
Patient was put on corticosteroids with NSAID; she was advised regular follow up every 2 months.

Discussion

MCTD is characterized by diverse symptoms of arthritis, scleroderma, SLE, polymyositis associated with high titres of U1RNP. Raynaud phenomenon may be one of the presenting features at an early stage and is defined by the triple-phase sequence of blanching, cyanosis & erythema occurring spontaneously or in response to cold, physical or emotional stress. Raynaud phenomenon is seen in approximately 85% cases with MCTD.

As seen in this case, a similar case published in Korean Journal of Paediatrics showed a 7 yr old girl having initial presentation with Raynaud's phenomenon, swollen hands and subsequently followed by the other features during follow up.

A study published in *Western Journal of Medicine* showed the incidence of Raynaud phenomenon in 93% in patients diagnosed with MCTD.

Take Home Message

- Raynaud's phenomenon may be a significant early presenting feature in cases with MCTD.
- Anti U1RNP antibody is the most important diagnostic marker to establish the diagnosis of MTCD.
- The diagnostic criteriai.e. Alarcon-Segovia, Kusukawa,Kahn's should be kept in mind before making the final diagnosis of MTCD.

References

1. Mixed connective tissue disease. Stephen D et al , Western J Med. 132:289-293, April 1980
2. A case of MCTD presenting with Raynaud's phenomenon. Soo Young Kim, Young Seok Choi et al. Korean Journal of Pediatrics, Vol. 51, no.8, 2008
3. Mixed Connective Tissue Disease, Mayo Clinic
4. Mixed Connective Tissue Disease, Eric L.Greidinger et al,NORD
5. Mixed Connective Tissue Disorder: A case report, Rishi Katewa et al,International Journal of Case Reports and Images,vol. 5, no. 9, page 604-670 (sept 2014)

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A Very Rare Hemoglobin Variant Discovered on HPLC Screening

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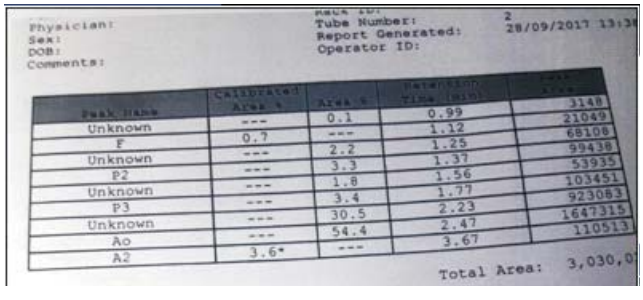
Summary

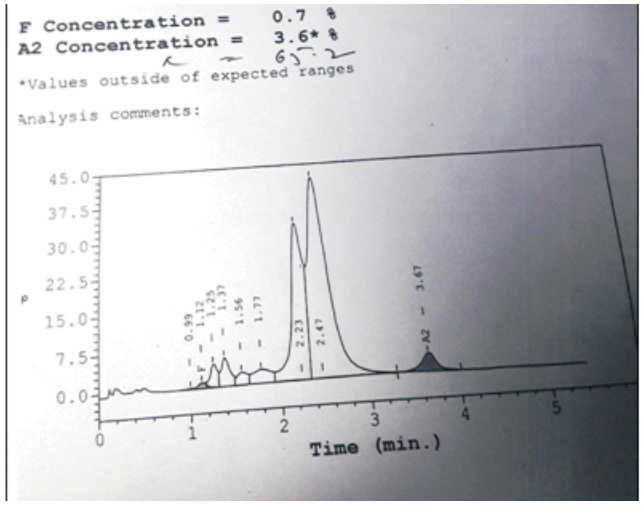
A 32 year old male submitted his sample for hemoglobin (Hb) variant analysis as part of routine screening. His hemogram was found to be normal. Hb variant analysis showed an unknown peak of 30.5% at retention time of 2.23 min along with HBA0 window. This case was reported as Hb Hofu based on HPLC findings; and family screening along with molecular studies were further advised.

Background

High-pressure liquid chromatography (HPLC) can be used as a screening tool to pick rare hemoglobin variants. We report a case of a rare Hb variant, Hb Hofu, which has only few case reports in the world literature.

Case Presentation and Investigations





A bifid HBA0 peak noted on HPLC chromatogram

A 32 year old male, resident of Gwalior, submitted his sample for Hb variant analysis, as part of routine screening. Complete hemogram was performed by automated cell counter (Beckman Coulter LH 750 hematology analyzer) and HPLC was carried out by Biorad Variant-II. His haemoglobin was 14.4g/dl, with normocytic normochromic blood picture and mild anisocytosis. Total

leucocytic count and platelet counts were found to be normal. Hb variant analysis showed an unknown peak of 30.5% at retention time of 2.23 min along with HBA0 window. A bifid peak of HBA0 was noted. A provisional diagnosis of Hb Hofu heterozygous was made.

Treatment and Follow-up

Molecular studies, family studies and genetic counselling were advised for this patient.

Discussion

Hb Hofu (alpha 2 beta 2 126 Val----Glu; H4), is a rare and unstable hemoglobin variant. Very few cases have been reported all over the world, since it was first reported in 1968. Hb Hofu is rarely found in India and its occurrence is undoubtedly much rarer than other frequently occurring unstable hemoglobins like HbE, HbS, and HbD. The first few cases of Hb Hofu were observed during extensive screening in Japanese population, in 2 Indian Valmiki families in heterozygous condition and in combination with HBS, in a Spanish woman in combination with beta thalassemia and in a female from Central India, also in combination with beta thalassemia (1).

Purohit P et al (2) as part of an extensive HPLC screening program, detected twelve Hb Hofu heterozygotes and three sickle Hb Hofu compound heterozygotes. They concluded that the retention time of Hb Hofu on HPLC is very close to that of HbA(0) and often elutes in the A0 window. Thus, there is every possibility of the HbS-Hofu chromatogram to be misinterpreted as that of a sickle cell trait/transfused sickle cell-beta-thalassemia case. Hb Hofu heterozygous individuals are usually asymptomatic, whereas compound heterozygtes may have mild anemia. One case of compound heterozygous Hb Hofu-HBS presented with painful occlusive crisis in a study (2).

It is important to create awareness about rare/uncommon Hb variants for the purpose of pre-marriage screening and counselling.

Learning Points/ Take Home Message

1. Hb Hofu is a rare and unstable hemoglobin variant which occurs as heterozygous or compound heterozygous in combination with HBS and beta/alpha thalassemia. The knowledge of this rare variant is essential for genetic counselling.
2. The retention time on HPLC is reliable, and the percentage of the variant and the appearance of the chromatogram, are very useful pieces of information for detection and identification of rare hemoglobin variants.

References:

1. Two Rare Hemoglobin Variants with α Thalassemia in Eastern Indian Population. Dipanwita Das, Nandini Chattopadhyay, Arghya Mukherjee. Institute of Haematology and Transfusion Medicine, Medical College, Kolkata, India. Hematology reports.
2. Purohit P, Mashon RS, Patel S, Dehury S, Pattanayak C, Das K, Nair S, Italia K, Bag S, Colah R, Patel DK. Clinical and molecular characterization of Hb Hofu in eastern India. Int J Lab Hematol. 2014 Feb;36(1):71-6. doi: 10.1111/ijlh.12128. Epub 2013 Jul 25.
3. Brittenham G, Lozoff B, Harris JW, et al. Hemoglobin Hofu or alpha 2 beta 2 [126 (H4) Va1 leads to Glu] found in combination with hemoglobin S. Hemoglobin 1978;2:541-9.
4. Russo FM, John ME, Waterman MR, et al. Hemoglobin Hofu (beta 126 Val is replaced by Glu) in a black American. Hemoglobin 1979; 3:83-6.
5. Arends T, Garlin G, Guevara JM, et al. Hemoglobin Hofu associated with beta0- thalassemia. Acta Haematol 1985; 73:51-4.
6. Pande PL, Prakash S, Tiwary RS, et al. Beta-thalassemia intermedia in an Indian female with the Hb Hofu [beta 126(H4)Val-->Glu]-beta zero-thalassemia [codons 8/9 (+G)] combination. Hemoglobin 1995;19:301-6

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Hybrid Tumor of the Parotid Gland – A Rare Case

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Abstract
The parotid gland is the most common location of benign neoplasms affecting major salivary glands. Hybrid tumors are very rare tumor entities which are composed of two different tumor types, each of which conforms to an exactly defined tumor category. The tumor entities of a hybrid tumor are not separated but have an identical origin within the same topographical area. This report describes an 82-year-old male with two neoplasms occurring within a single parotid gland tumor. The clinical and histologic features are described in addition to review of the literature.

Introduction
The parotid gland is the most usual location of benign neoplasms affecting major salivary glands and quite often the recurrence of these tumors is noticed, especially in the case of pleomorphic adenoma.

When synchronous tumors of the parotid gland are encountered, the most common histology is that of multiple Warthin's tumors [1]. Multifocal primary tumor (MPT) in the parotid gland is a rare phenomenon [2, 3]; when it occurs, the most common combination is Warthin tumor and a pleomorphic adenoma [4, 5]. Hybrid carcinomas of the salivary gland are a recently defined and rare tumor entity, consisting of two histologically distinct types of carcinoma within the same topographic location [6].

Hybrid tumors must also be distinguished from the multiple occurrences of salivary gland tumors which can develop syn- or metachronously.

Case Report
An 82-year-old male patient, smoker, presented with a large mass growing progressively over a period of 7years in right parotid region. Patient underwent routine blood examination, which were within limits. USG showed multifocal lesion with small cystic areas. Superficial parotidectomy was performed.

Grossly received a nodular piece with variegated appearance revealing brownish and whitish areas measuring 5x3x2 cm (Figure A). On microscopic examination shows two well defined nodules (Figure B), one nodule is having tall epithelium with oncocytic features and prominent lymphoid stroma - Warthin Tumor (Figure C). Other tumor shows dominant 70% and other nodules shows mixed tumor with biphasic appearance of intimate admixture of epithelium and stroma-pleomorphic adenoma (Figure D).

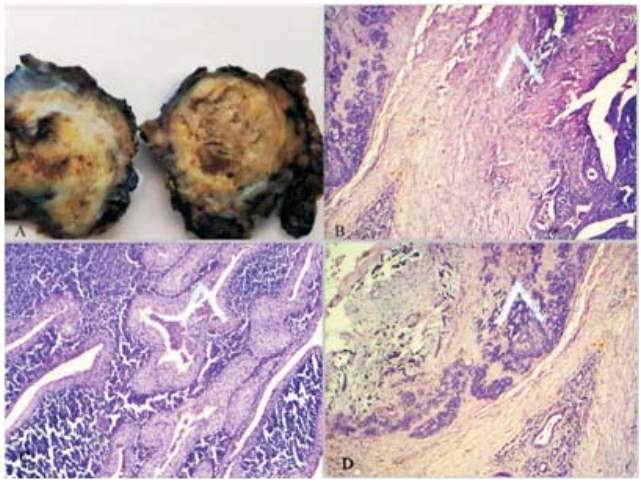

Figure A: Gross photomicrograph showing variegated appearance; Figure B: Microscopic picture showing pleomorphic adenoma on left side and Warthin tumor on right lower corner (H&E; 40X); Figure C: Photomicrograph showing area of Warthin tumor (H&E; 200X); Figure D: Photomicrograph showing area of Pleomorphic adenoma (H&E; 200X).

Discussion
Very few articles have described the presence of synchronous parotid tumor. Unilateral synchronous neoplasms of the parotid gland are rare. The incidence ranges from 0.2% to 0.7% of parotid gland tumors [1-8].

The combination most commonly seen is pleomorphic adenoma and a Warthin's tumor [9]. Hybrid tumors are very rare tumor entities which are composed of two or more different tumor types, each of which conforms to an exactly defined tumor category. The tumor entities of a hybrid tumor are not separated but have an identical origin within the same topographical area [10].

In most cases adenoid cystic carcinoma has been the predominant component in hybrid carcinomas [11]. In contrast, biphasically differentiated tumors are a mixture of two cellular patterns with a corresponding term in the tumor classification. Examples of a biphasic differentiation are basaloid-squamous carcinoma, adenosquamous carcinoma or sarcomatoid carcinoma, and epithelial-myoepithelial carcinoma, mucoepidermoid carcinoma, or adenoid cystic carcinoma. Hybrid tumors must also be distinguished from the multiple occurrences of salivary gland tumors which can develop syn- or metachronously [10].

In 1996, Seifert and Donath reported 5 cases of hybrid tumors between 1965 and 1994 in the tissue samples of more than 6600 salivary gland tumors covered by the

Salivary Gland Register (Institute of Pathology, University of Hamburg, Germany). This means less than 0.1% of all registered tumours [10].

Moreover, in 2002, Nagao et al. described nine cases of hybrid carcinomas. The combinations of carcinoma components in their report were as follows: epithelial-myoepithelial carcinoma and basal cell adenocarcinoma in two cases, epithelial-myoepithelial carcinoma and squamous cell carcinoma in one case, salivary duct carcinoma and adenoid cystic carcinoma in two cases, myoepithelial carcinoma and salivary duct carcinoma in one case, acinic cell carcinoma and salivary duct carcinoma in one, and squamous cell carcinoma and salivary duct carcinoma in two cases. The prevalence of hybrid carcinomas was 0.4% among the parotid gland tumors in their series [6].

Additionally, in 2003, Ruíz-Godoy et al. reported two patients with hybrid tumours in minor salivary glands of the palate. The first case involved adenoid cystic carcinoma and mucoepidermoid carcinoma, and the second case exhibited adenoid cystic carcinoma and epithelial-myoepithelial carcinoma [11].

In 2010, Kainuma et al. described a case of a 74-year-old male with a hybrid carcinoma composed of epithelial-myoepithelial and salivary duct carcinomas of the right parotid gland [12].

References

1. Stavrianos S. D., McLean N. R., Soames J. V. Synchronous unilateral parotid neoplasms of different histological types. European Journal of Surgical Oncology. 1999; 25(3):331–332.
2. Zeebregts C. J., Mastboom W. J. B., van Noort G., van Det R. J. Synchronous tumours of the unilateral parotid gland: rare or undetected? Journal of Cranio-Maxillofacial Surgery. 2003; 31(1):62–66.
3. Tanaka S., Tabuchi K., Oikawa K., et al. Synchronous unilateral parotid gland neoplasms of three different histological types. Auris Nasus Larynx. 2007; 34(2):263–266.
4. Goh P. M. Y., Cheah E. Synchronous tumours of the parotid gland with different histology. British Journal of Oral and Maxillofacial Surgery. 1989; 27(3):198–202.
5. Seifert G., Donath K. Multiple tumours of the salivary glands terminology and nomenclature. European Journal of Cancer Part B: Oral Oncology. 1996; 32(1):3–7.
6. Nagao T., Sugano I., Ishida Y., et al. Hybrid carcinomas of the salivary glands: report of nine cases with a clinicopathologic, immunohistochemical, and p53 gene alteration analysis. Modern Pathology. 2002; 15(7):724–733.
7. Janecka I. P., Perzin K. H., Sternschein M. J. Rare synchronous parotid tumors of different histologic types. Plastic and Reconstructive Surgery. 1983; 72(6):798–802.
8. Schilling J. A., Block B. L., Speigel J. C. Synchronous unilateral parotid neoplasms of different histologic types. Head and Neck. 1989; 11(2):179–183.
9. Ethunandan M., Pratt C. A., Morrison A., Anand R., Macpherson D. W., Wilson A. W. Multiple synchronous and metachronous neoplasms of the parotid gland: the Chichester experience. British Journal of Oral and Maxillofacial Surgery. 2006; 44(5):397–401.
10. Seifert G., Donath K. Hybrid tumours of salivary glands. Definition and classification of five rare cases. European Journal of Cancer Part B: Oral Oncology. 1996; 32(4):251–259.
11. Ruíz-Godoy R. L. M., Mosqueda-Taylor A., Suárez-Roa L., Poitevin A., Bandala-Sánchez E., Meneses-García A. Hybrid tumours of the salivary glands. A report of two cases involving the palate and a review of the literature. European Archives of Oto-Rhino-Laryngology. 2003; 260(6):312–315.
12. Kainuma K., Oshima A., Suzuki H., Fukushima M., Shimojo H., Usami S.-I. Hybrid carcinoma of the parotid gland: report of a case (epithelial-myoepithelial carcinoma and salivary duct carcinoma) and review of the literature. Acta Oto-Laryngologica. 2010; 130(1):185–189.

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Follicular Dendritic Cell Sarcoma

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Summary
Follicular dendritic cell sarcoma (FDCS) is an extremely rare, mostly low grade histiocytic tumour often presenting as a cervical lymphadenopathy. Histologically characterised by proliferation of ovoid to spindles cells arranged in storiforming or whorling pattern and immunophenotypically by expression of follicular dendritic cell markers. Complete surgical excision is the main treatment modality. We present a case of FDCS presenting as submandibular cervical lymphadenopathy in a 65 year male of North Indian ethnicity.

Key Words
Follicular dendritic cell sarcoma, histiocytic disorder, cervical lymphadenopathy

Introduction
Follicular dendritic cell sarcoma (FDCS) is a rare tumour characterised by neoplastic proliferation of spindled to ovoid cells showing morphologic and immunophenotypic features of follicular dendritic cells. It often presents as a cervical mass or cervical lymphadenopathy affecting young to middle aged adults of both sexes [1]. Often poses a diagnostic challenge to a pathologist due to limited experience with the tumour. We present a case of FDCS presenting as submandibular cervical lymphadenopathy in a 65-year-old male of North Indian ethnicity.

Case Presentation
A 65-year-old male patient of North Indian ethnicity presented with complaint of painless progressive left submandibular swelling for 6 months. It was not associated with complaints of cough, fever, weight loss or night sweats.

On local examination, a firm, non-tender well circumscribed mass was noted in left submandibular region measuring 3x3x2.5 cm. No associated hepatosplenomegaly or lymphadenopathy was demonstrated. Peripheral blood counts were within normal limits. Tuberculin test was negative and chest X ray was also within normal limits. Fine needle aspiration cytology (FNAC) from enlarged lymph node revealed features suggestive of a poorly differentiated malignant tumour and excision with histopathological examination was advised for definite tumour categorisation. This enlarged lymph node was then excised and subjected to histopathological examination.

Grossly the lymph node measured 3.5 cm in maximum dimension and was firm, fleshy grey white on cut surface. On microscopic examination, there was diffuse effacement of nodal architecture by sheets of large round to ovoid cells with clear empty looking nuclei with frequent nuclear grooves and scanty to moderate pale eosinophilic cytoplasm with indistinct cell membranes (Figure 1a). Scattered multinucleated Warthin Finkeldey type of giant cells were also seen. Also seen in between the tumour cells were multiple dilated vascular spaces mimicking serum lakes of a thymus/ thymoma (Figure 1b). Perivascular lymphocytic cuffing was present. Scattered mitotic figures were seen and mitotic rate was 7-8/10HPF. However, there was no significant nuclear atypia or necrosis. A comprehensive immunohistochemical panel revealed these cells to be positive for CD21, CD23 (Figure 2), vimentin and negative for CK, EMA, LCA, CD3, CD20, CD30, CD4, CD8, S100 protein, CD68, CD1a and TTF1.

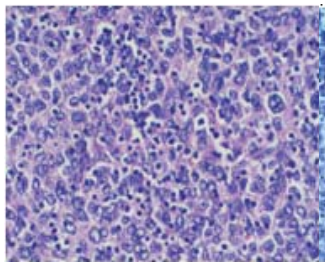

Figure 1a (H&E, 40X) - Diffuse sheets of round to ovoid tumour cells with grooved nuclei

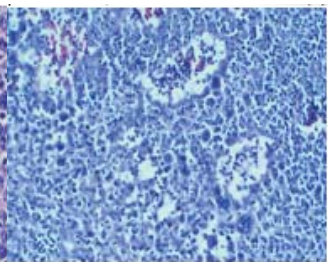

Figure 1b (H&E, 20X) - Dilated cystic spaces (serum lakes) and scattered Warthin Finkeldey type of gaint cells between tumour cells

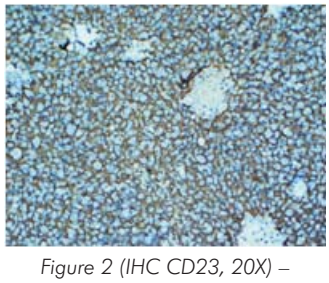

Figure 2 (IHC CD23, 20X) – Tumour cells showing diffuse membranous positivity for CD23

A diagnosis of low grade follicular dendritic cell sarcoma was established on the basis of morphological and immunohistochemical features.

Patient is well two months following excision and will undergo regular follow up.

Discussion
Follicular dendritic cell sarcomas (FDCS) are extremely rare histiocytic tumours with available current literature mostly in the form of case reports and small case series. Tumours are known to arise from follicular dendritic reticulin

meshwork. Follicular dendritic cells are present in both, nodal and extranodal lymphoid follicles and perform important functions of antigen presentation and providing structural integrity to the follicles [1,2].

FDCS can occur in both nodal as well as extranodal locations and may affect young to middle aged adults (mean age - 44 years, median age - 5th decade) of both sexes [3]. Mostly patients present with painless progressive cervical lymphadenopathy. Extranodal disease is seen in one third cases and the common extranodal sites affected are skin, mediastinum, tonsil, gastrointestinal tract and soft tissue [3]. It may be associated with Castleman's disease in up to 10-20% cases or with autoimmune diseases such as paraneoplastic pemphigus or myasthenia gravis [4,5]. Once a diagnosis of FDCS is established a deliberate search for these associated diseases may be done to help further management of the patient. However, such an association was not found in the current case.

FDCS in both nodal as well as extranodal location share similar morphological and immunohistochemical features. Morphologically, tumour cells are ovoid to spindle shaped and may be arranged in whorls, fascicles, storiform pattern, diffuse sheets and vague nodules. They characteristically show indistinct cytoplasmic borders with vesicular nuclear chromatin and small nucleoli. Scattered multinucleated tumour giant cells, serum lakes (fluid filled cystic spaces) and perivascular lymphocytic cuffing may be seen. On immunohistochemistry, tumour cells are positive for one or more of follicular dendritic cell markers like CD21, CD23, CD35,4 often positive for EMA, clusterin 6 and podoplanin7 and negative for CK, LCA, CD68, S100, CD1a, CD3, CD20 and CD30.

The important differential considered in the current case included metastatic undifferentiated carcinoma, diffuse large B cell lymphoma, metastatic papillary carcinoma thyroid, interdigitating dendritic cell sarcoma and Langerhan's cell histiocytosis (LCH).

Given the fact that metastatic carcinoma and lymphomas are particularly more common than FDCS in cervical lymph nodes and histological presence of large pleomorphic cells in diffuse sheets instead of characteristic storiforming or whorling pattern seen with most FDC's, these former two become an important part of differential diagnosis. However, absence of staining with CK, EMA, LCA and CD20 and expression of follicular dendritic cell markers (CD21 and CD23) is helpful in distinguishing the former two from the latter.

Presence of clear empty looking nuclei with nuclear grooves may mimic nuclear features of papillary carcinoma of thyroid, however, the absence of staining for CK and TTF1 and expression of follicular dendritic cell markers by tumour cells is helpful in distinguishing these two tumours.

Similarly, presence of nuclear grooves and multinucleated cells may prompt us to rule out LCH and interdigitating dendritic cell sarcoma. Eosinophils are usually present admixed with tumour cells in LCH and tumour cells characteristically express CD68, S100 protein, CD1a and langerin, whereas interdigitating dendritic cell sarcoma is characterised by paracortical involvement with absence of storiform or whorled pattern, expression of S100 protein and absence of staining with CD1a and langerin. Both these tumours (LCH and interdigitating dendritic cell sarcoma) lack expression of FDC markers.

FDCS may be histologically classified into high and low grades. High grade histologic features include significant cellular atypia with irregular nuclear membranes and enlarged hyperchromatic nuclei, high mitotic count (>10/10HPF) and extensive necrosis [8].

High grade tumours are associated with increased risk of recurrent or metastatic disease.

Other poor prognostic factors are intra-abdominal location and large tumour size. Fortunately, current case had cervical lymphadenopathy with no evidence of abdominal disease and a low grade FDCS with small tumour size.

No well-defined treatment protocols are available. However, most patients are cured of disease by complete surgical excision. Definite role of chemotherapy or radiotherapy is still not well established.

Conclusion

Given the rarity of the tumour, a high index of suspicion supplemented with appropriate immunohistochemical work up is mandatory to arrive at an appropriate diagnosis.

References

1. Imal Y, Yamakawa M. Morphology, function and pathology of follicular dendritic cells. Pathol Int.1996;46:807-833.
2. Jaffe R, Pileri S, Facchetti F, Jones D, Jaffe E. Histiocytic and dendritic cell neoplasms, Introduction. In: Swerdlow S, Campo E, Harris N, et al, eds. WHO Classification of Tumours of Haematopoietic and Lymphoid Tissues. Lyon, France: IARC Press; 2008:354-355. World Health Organisation Classification of Tumours; vol 2.
3. Wu A, Pullarkat S. Follicular dendritic cell sarcoma. Arch pathol lab med 2016;140:186-90.
4. Chang K, Weiss L. Other histiocytic and dendritic cell neoplasm. In: Jaffe E, Harris N, Vardiman J, Campo E, Arber D, eds. Haematopathology. 1st ed. Philadelphia, PA: Saunders/Elsevier; 2011:829-33.
5. Lee IJ, Kim SC, Kim HS, et al. Paraneoplastic pemphigus associated with follicular dendritic cell

sarcoma arising from Castleman's tumour. J Am Acad Dermatol 1999;40:294-97.

6. Grogg KL, Lae ME, Kurtin PJ, Macon WR. Clusterin expression distinguishes follicular dendritic cell tumours from other dendritic cell neoplasms: report of a novel follicular dendritic cell marker and clinicopathologic data on 12 additional follicular dendritic cell tumors and 6 additional interdigitating dendritic cell tumours. Am J Surg Pathol 2004;28:988-98.
7. Yu H, Gibson JA, Pinkus GS, Hornick JL. Podoplanin (D2-40) is a novel marker for follicular dendritic cell tumours. Am J Clin Pathol 2007;128:776-82.
8. Perez-Ordonez B, Erlandson RA, Rosai J. Follicular dendritic cell tumour: report of 13 additional cases of a distinctive entity. Am J Surg Pathol 1996;20:944-55.

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Salivary Duct Carcinoma: Cyto-histologic Features and Review of Literature

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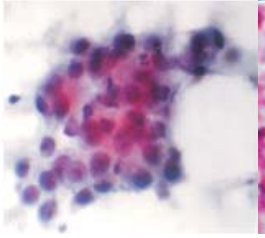
Introduction

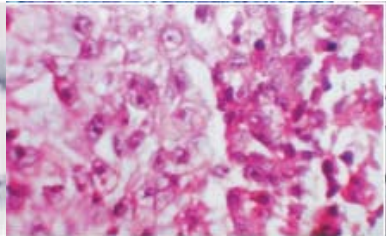
Salivary duct carcinoma(SDC) is an uncommon tumor of salivary galnds, first described by Kleinsasser et al. in 1968 [1] and is usually seen in elderly males and involves most commonly in parotid gland. Microscopically, it resembles ductal carcinoma of breast, hence the term. It may arise in pleomorphicadenoma, low grade adenocarcinoma, Warthin's tumor or de novo. Patients may present with rapidly growing mass, pain or facial nerve palsy (40-60%). Lymphadenopathies are noticed in 35% of cases[2].

Case Presentation

A 45-year-old female presented with left parotid painless swelling for last 7years with history of recentpain and rapid increase in size for last 4 months. On examination swelling was 5x5cm, firm with regional lymphadenopathy. FNAC was done using 10ml syringe and 22G needle. Air dried MGG stained smears were studied. Smears showed clusters of malignant epithelial cells with prominent nucleoli, reported as undifferentiated carcinoma. Patient underwent surgical excision. On HPE, epithelial component was in form of ducts with central necrosis (comedo-like pattern) and papillary structures. Cells were pleomorphic with hyperchromatic nuclei and prominent nucleoli. Areas of necrosis were noticed alongwith high mitotic activity. No metastatic deposits were seen in lymph nodes.



Prominent nucleoli in malignant cells on FNA (PAP 400X)



SDC depicting prominent nucleoli (H&E 400X)

Discussion

SDC account for 0.2-2% of salivary gland tumors. SDC is an epithelial tumor of high malignancy. This rare carcinoma histologically resembles comedo carcinoma of the breast. Most affected patients die within 3 years. At surgery, the tumor usually is found to infiltrate adjacent tissues and involves cervical lymph nodes [3]. Several reports have described cytological features of SDC; however, accurate diagnosis by FNAC can be difficult due to its non-specific high grade nuclear features. The cellular yield on FNAC can vary from low to high, depending on the degree of desmoplasia and necrosis. Cells are large, polygonal and have abundant non-granular cytoplasm. Nuclei are ovoid, show moderate to severe pleomorphism and occasional nucleoli. Mitotic figures are frequently seen. Moriki et al have demonstrated that nuclei of salivary duct carcinomas stain positive for androgen receptors (AR) while all other salivary gland tumors stain negative. They recommend AR staining on FNA smears for rendering a pre-operative diagnosis [6].

Differential diagnosis of SDC includes high grade mucoepidermoid carcinoma, aderocarcinoma not otherwise specified (ADC-NOS),oncocytic neoplasms, Warthin's tumor with nuclear atypia and acinic cell carcinoma [4].

Microscopically, the tumor is composed of an intraductal and invasive component. Intraductal component is cribriform, papillary, solid with comedo-like central necrosis. The infiltrative component is made of glands, cords of cells with desmoplastic reaction. Several variants have been described such as sarcomatoid salivary duct carcinoma, low grade neoplasm, and mucin-rich variant. Cells may present in cohesive irregular clusters, broad flat

and branching sheets, cribriform pattern or single cells. Cells are large polygonal and have abundant non-granular cytoplasm. Nuclei are ovoid with moderate to severe pleomorphism and occassional nucleoli. Mitotic figures are frequently seen [6].

Immunohistochemical findings are not useful, but a constant overexpession of keratin, HER/2neu, CEA, and c-erb-B2 have been described. Frequently, androgen receptor and prostate-specific antigen expression have been reported[2].

Salivary duct carcinoma is an aggressive tumor with a worse prognosis. This is due to its metastatic potential. Nearly 50% of the patient die within 4 to 5 years. Prognostic criteria are non-consensual consisting mainly in the young age, a tumor superior to 3cm, infiltrative tumor margins, local recurrence, lymphatic and distant metastases, necrosis, percentage of infiltrating, and intraductal components. Colloid carcinoma variant and low grade SDC have been described with better prognosis [2].

References

1. Lewis JE, Mc KinneyBC, Weiland LH, Ferreiro JA, Oslen D. Salivary duct carcinoma. Clinicopathologic and immunohistochemical review of 26 cases. Cancer 1996;7:223-30.
2. Jaehne M, Roeser K, Jaekel T, Schepers JD, Albert N, Loning T. Clinical and immunohistologic typing of salivary duct carcinoma:A report of 50 cases. Cancer 2005;103:2526-30.
3. Seifert G, Sobin LH. The World Health Organisation's Histological Classification of Salivary Gland Tumors. Cancer 1992;70:379-385.
4. Klijanienko J, Viehl P. Cytologic characteristics and histomorphologic correlations of 21 salivary duct carcinomas. Diagn Cytopathol.1997;16:526-30.
5. Brandwein-gensler, Skalova A, NagaoT. Salivary duct carcinoma. In: BarnesL, Eveson JW, Sidransky D, editors. World Health Organisation's Classification of tumours, Pathology and genetics of head and neck tumours. Lyon:IARCC Press;2003.pp.236-8.
6. Deshpande V, Verma K. Fine needle aspiration cytology of salivary duct carcinoma. Journal of Cytology 1997;14:59-62.

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Disseminated Nocardiosis with Cutaneous Manifestations

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Summary
We describe a case report of a 72 year male patient presenting with high grade fever, productive cough and generalized weakness in medical emergency. He also had pustular lesions all over his body. The patient was diagnosed with pancytopenia three months back. He had past history of recurrent fever. CT chest revealed consolidation in posterior segment of left upper lobe and superior lingula, with mild left pleural effusion suggesting active chest infection.

Bronchoscopy was done and thick purulent aspirate was sent for AFB stain, Gram stain and pyogenic culture. The Gram stain of the bronchial aspirate revealed Gram positive branching, filamentous, fragmented bacilli against a background of neutrophils. Hence modified AFB stain was done which revealed acid fast branching bacilli. Chalky white colonies grew on blood agar plates after 48 hours of incubation. The Gram stain and modified AFB stain of the colonies obtained, too showed Gram positive, filamentous, branching bacilli which were partially acid fast. The dermatologist advised a KOH smear from the pustules. The aspirate from the pustule was negative for fungi, but revealed similar acid fast filamentous bacilli on modified AFB stain with similar findings on culture. The patient was diagnosed of having Disseminated Nocardiosis. He responded to co-trimoxazole, becoming afebrile within a week with resolution of cutaneous lesions.

Background
Infections caused by Nocardia species are infrequent but challenging to clinicians as the treatment requires expertise and if left untreated, the disease invariably has indolent course with high morbidity and mortality [1]. Any patient on long term corticosteroids with additional immunosuppression-prone conditions like idiopathic thrombocytopenic purpura, AIDS, asthma, chronic hepatits disease and diabetes mellitus should be investigated for Nocardiosis, whenever they present with skin, brain or pulmonary lesions [2]. Early recognition and prompt treatment usually results in complete cure, except for patients with nocardial brain abscesses in whom the

mortality remains at approximately 50% [1].

Case Presentation

- A 70-year-old male patient presented with high grade fever, productive cough, breathlessness and generalized weakness. He also had generalized pustular lesions (3-4 mm in diameter) surrounded by an erythma.
- The patient was a known case of refractory pancytopenia, diagnosed three months earlier. He had history of recurrent fever and corticosteroid intake and was also being given repeated transfusions of platelets and PRBCs.
- There was a past history of hypertension but no past history of diabetes mellitus, asthma, jaundice, tuberculosis or physical trauma.
- Cardiovascular and CNS examination were normal but respiratory rate was 24/min.
- No abnormality was detected in USG abdomen but CT scan of the chest revealed consolidation in posterior segment of left upper lobe and superior lingula with mild pleural effusion, suggestive of active chest infection.

Investigations

CBC: Hb-7.3g/dl, TLC-2400/cumm, DLC-P-54%, L-30%,M-08%, Band cells-06%, metamyelocyte-02%
Platelet count:10,000/cumm
Peripheral smear: Pancytopenia with left shift and toxic granulations
Bone marrow aspirate findings: Hypocellular marrow with markedly decreased erythroid, myeloid and megakaryocytic series
Bronchoscopy: Thick pus was present which was sent for AFB, Gram stain and pyogenic culture
Microbiology Investigations: Gram stain of bronchoscopic sample showed Gram positive branching, filamentous, fragmented bacilli. Acid fast bacilli were not seen. The sample was therefore processed for modified AFB stain (decolourised with 1% sulphuric acid), which revealed branching, filamentous, partially acid fast bacilli (Figure 1). On culture, dry, chalky white colonies were isolated after 48 hours of incubation on blood agar (Figure 2). Gram stain (Figure 3) and modified AFB stain of the colonies had a similar picture.

KOH smear of the purulent aspirate from pustules did not reveal any fungal element. This specimen was repeated for same investigations and similar findings were observed.

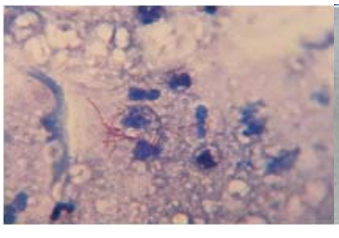

Figure 1: Modified Acid Fast Stain Showing Filamentous, Fragmented, Branching, Acid Fast Bacilli (X100)

Figure 2: Dry, Chalky White Colonies Of Nocardia On Blood Agar

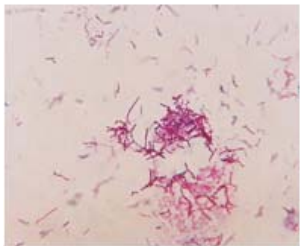

Figure 3: Gram Stain from the Colony Showing Gram Positive, Branching Bacilli (X100)

Differential Diagnosis

Nocardiosis may mimic tuberculosis, sarcoidosis, actinomycosis, lung abscess, pulmonary and disseminated fungal infections and malignancy of lungs, clinically and on radiology.

Treatment and Outcome

The patient was put on a combination of co-trimoxazole and imipenem. He responded well with resolution of fever and cutaneous lesions within a week. The follow up was uneventful.

Discussion

Nocardiosis is a rare Gram positive bacterial infection, caused by an aerobic actinomycetes of the genus Nocardia. It can be localized or systemic. The aerobic actinomycetes are a large and diverse group of Gram positive bacteria that appear on microscopy as branching, filamentous bacilli.

Nocardia species are ubiquitous in the environment and human infection occurs from direct inoculation of the skin or soft tissues or by inhalation. The risk of nocardial infection is increased in immunocompromised patients, particularly those with defects in cell-mediated immunity such as prolonged glucocorticoid therapy, malignancy, organ transplant recipient, HIV infection, diabetes mellitus and alcoholism [3].

Disseminated Nocardiosis is defined as lesions containing nocardia at more than one body location [5]. The lungs are primary site with infection occurring in more than 40% of reported cases. Secondary cerebral localization and clinically silent destructive infections are sufficiently common, accounting 44% of systemic nocardiosis of CNS with high mortality. Other extrapulmonary manifestations include the kidney, bone, muscle and skin (10%) involvement [3]. Concurrent involvement of the lung and skin mimicking bronchogenic carcinoma with cutaneous metastasis has also been reported [4].

As radiology is non-specific, microbiological evaluation (Gram stain, modified AFB stain and pyogenic culture) of the clinical specimen is imperative for diagnosis of Nocardial infection. The correct and timely diagnosis of Nocardiosis and institution of proper therapy can be life saving, though most cases of disseminated Nocardiosis have fatal outcome [2].

The antibiotic treatment recommended depends on severity and location of the infection and on the host immunity [1]. Therapy is initiated with parenteral treatment with Trimethoprim/ Sulphmethoxazole (TMP/SMZ, 10–20 mg of TMP per kg and 50–100 mg of SMZ per kg are given each day in two divided doses and later, the daily doses can be decreased to 5 mg/kg and 25 mg/kg, respectively) [3]. In cases where allergy/resistance to TMP/SMZ is present the best alternative oral drug available is minocycline given in a dose of 100-200 mg twice daily. Amikacin, imipenem and ceftriaxone are other alternative parenteral drugs used in patients who are resistant or allergic to TMP/SMZ [5]. In a severe infection that does not involve the CNS, the recommended treatment regimen is intravenous (IV) induction therapy with TMP SMZ (15 mg/kg IV of the trimethoprim component per day in two to four divided doses) plus amikacin (7.5 mg/kg IV every 12 h) [3].

Treatment may be given from six months to one year depending upon the response of the patient as evidenced by clinical improvement and radiological clearing of the lesions. Surgical treatment of nocardiosis includes drainage of pus from the pleural cavity by aspiration or insertion of an intercostal tube. Successful surgical management of cerebral nocardiosis is problematic [5].

In summary, nocardiosis is an infection that is rare and difficult to diagnose and should be included in the differential diagnosis of patients in whom there are respiratory, cutaneous and/or neurological manifestations, principally in individuals with cellular immunodeficiency or chronic lung disease.

Learning Points/ Take Home Messages

- Nocardia are opportunistic pathogens that can cause localized or disseminated infections.
- The pulmonary infection in humans may be self-limited, subclinical or may progress to an acute, subacute or chronic disease mimicking tuberculosis, fungal infection or even malignancy.
- Haematogenous dissemination spreads particularly to the CNS, skeletal system and soft tissue structures and can result in fatal outcome. Disseminated nocardiosis is defined as involvement of two non contiguous sites.
- As radiology is non-specific hence microbiological investigations are imperative for the diagnosis.
- Timely diagnosis and institution of proper antimicrobial therapy can be life saving.

References

1. Corti ME et al. Nocardiosis: a review. 2003, International Journal of Infectious Diseases, 7(4), 243-250.
2. Branco L et al. Disseminated Nocardiosis: report of five cases. 2015, Journal of Medical Microbiology Case Reports, DOI 10.1099/jmmcr.0.000046, 1-5.
3. Arjun R et al. Disseminated nocardiosis masquerading as metastatic malignancy. 2016, Lung India, 33 (4), 434-438.
4. Nenoff P et al. Pulmonary nocardiosis with cutaneous involvement mimicking a metastasizing lung carcinoma in a patient with chronic myelogenous leukaemia. 2000, European Journal of Dermatology; 10:47 51.
5. Dar IH et al. Disseminated nocardiosis: a case report with review of the literature. 2009, Journal of the Turkish Academy of Dermatology. 3 (4): 93402c.

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Giant Cell Tumour of Tendon Sheath: A Common Tumour at an Uncommon Site and Unusual Age

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Summary
Giant cell tumour of tendon sheath (GCTTS) is a soft tissue tumour consisting principally of a proliferation of synovial cells arising from a tendon sheath. Majority of the patients are between 20-50 years of age. Pediatric cases of GCTTS are uncommon [1]. GCTTS arises from the synovial tissue of the joint, bursa or tendon sheath. The commonest site of occurance is the hand. GCTSS of the knee is extremely rare [2]. We report here an unusual case where a one-and-a-half-year-old male child was operated for a swelling in the knee joint of three months duration. An extensive literature review revealed that GCTTS was rare in the knee joint and the lowest age reported was an 8-year-old child.

Histopathology examination revealed a giant cell tumour of tendon sheath.

Background
We present this case as extensive literature review revealed that GCTTS was rare in knee joint and the earliest age at which it was been reported earlier is an 8-year-old child.The purpose of reporting this case is to emphasise the possibility of GCTTS when there is a mass in the knee even if the case is a child and to avoid misdiagnosis.

Case Presentation
A one-and-a-half-year-old male child presented with suprapateller swelling and pain of two months duration. There was a slight limp. On clinical examination a small lump was felt over the knee, having smooth margins, which was mobile and not adherent to the overlying skin.A USG study revealed a well circumscribed hypoechoic SOL (1.9x1.6x0.9cm) with smooth margins, confined within the subcutaneous layer just superficial to quadriceps tendon. Colour doppler showed no internal signal.

The tumour was excised and sent for histopathology examination. The gross findings showed a well circumscribed nodular mass measuring 2x1.5x1 cm. Cut surface was greyish white and homogenous in appearance [Fig1].

Microscopy showed a tumour with well-circumscribed margins and composed of predominantly sheets of polyhedral cells having abundant eosinophilic cytoplasm and eccentric vesicular nuclei. These were admixed with spindloid cells. Foamy histiocytes and inflammatory cells were also noted. Fibrous bands were seen traversing the tumour cells. Few osteoclastic giant cells were also seen [Fig 2 & 3].

Based upon the above findings, a diagnosis of giant cell tumour of tendon sheath was rendered.

Discussion
GCTTS is synonymous with tenosynovial giant cell tumour. It arises from the synovial lined tendon sheath. GCTTS is a common tumour among adults and peaks between 20-50 years of age with a female preponderance of 2:1 [3]. It is uncommon in children below ten years [4, 5].There have been no studies investigating why GCTTS is rare in childhood. Some studies have shown that incidence of GCTTS in children below 10 years is 0 to 4.3 percent [6, 7]. In children, the commonest site of predeliction for GCTTS is the hand. It is extremely uncommon in the knee joint [8]. 85% of the cases occur in the finger of hand and feet and only 12% of the tumours are located in the large joints, mainly in the knee [9].

Extensive literature review showed that giant cell tumours of knee joint has been reported chiefly in adults. A Abdullah, S Abdullah, Haflah NHM et al have reported a giant cell tumour in the tendon sheath in the knee of an 11 year of old girl [10].

About 4-30% of cases of GCTTS can recur locally. Recurrence is common in tumours that show high cellularity and mitotic activity or in cases of incomplete excision. A retrospective analysis by Golve et al, done in patients with GCTTS in patients younger than 18 years has shown that there was no recurrence hence they have hypothesised that GCTTS in children are less likely to recur than those in adults [11].

Our patient was doing fine during a 1 month follow up visit with proper wound healing.

Take Home Messages
1. This case is unique on two counts. Firstly GCTTS has not been recorded at the age of one and half years.
2. In children, most case reports are of GCTTS involving the hand. Our patient presented with GCTTS at the knee joint which is quite unusual in children.
3. It is important to think about the possibility of this tumour for which routine H&E is the mainstay for diagnosis and complete excision is the mainstay for treatment.

References

1. A child with giant cell tumour of tendon sheath, UenoT, Ansai S, Omi T et al; Dermatology Online Journal 117 (5):9
2. Giant cell tumour of tendon sheath: A rare case in the left knee of a 15 years old boy, SunC, Sheng W, YuH, Han J; Oncol hett. 2012 Mar; 3(3), 718-720.
3. Weiss SW, Goldblum JR. Benign tumour and tumour-like lesions of synovial tissue. In : Enzinger and Weiss's Soft tissue tumour : 5th edition Mosby 2007; 769-88.
4. Biddulph SL. Synovial lesions In : Bogumill GP, Fleeglear EJeds. Tumours of the Hand and upper limb. Churchill Livigstone 1993; 183-191.
5. Hulse N, Watson SJ. Giant cell tumour of tendon sheath in a child : a case report. Hand Surg 2005 Jul; 10(1):
6. Rao As, Vigorita VJ. Pigmented Villonodular Synovitis (giant cell tumour of the tendon sheath and synovial membrane). A review of eighty one cases. J Bone joint Surg Am 1984 Jan; 66(1): 76-94.
7. Darwish FM, Haddad WH. Giant cell tumour of tendon sheath: experience with 52 cases. Singapore Med J. 2008 Nov; 49(11):879-82.
8. Pedrinechi A, Pins de Camargo O, Bispo Barreto R et al. Giant cell tumour of tendon sheath. Acta or top bras. 2007; 15(3) doi : 10. 1590/ S1413-78522007000300012.
9. Ghnaimat M, Alodat M, Alijazazi M et al. Giant cell tumour of Tendon sheath in the knee : Electronic Physician 2016 Aug; 8(8): 2807-2809.
10. A Abdullah, S Abdullah, Haflah NHM et al. Journal of the Chinese Medical Association. 2010 Jan; 73(1) : 47-51.
11. Gholve PA, Hasalkar H S, Kreiger PA et al. Giant cell tumour of tendon sheath: largest single series in children. J Pediatr Orthop 2007 Jan-Feb;27(1):67-74.

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Sialoblastoma: Case Report of a Rare Pediatric Tumour

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Summary
Sialoblastoma is a rare salivary gland tumour which usually presents in the neonatal period or early childhood. It can occur in the parotid or submandibular gland and has a potential for local and systemic recurrence, so long term follow up is essential. We present a case of a two-month-old male child who presented with a swelling in the submandibular region which was excised and sent for histopathology and immunohistochemistry. It was diagnosed as Sialoblastoma. The baby is on follow-up.

Background
Sialoblastoma is a tumor that recapitulates the primitive salivary gland anlage. It was first described in 1966 [1] by Vawter and Tefftas who referred to it as embryoma. In 1988, Taylor suggested the term 'sialoblastoma', as it describes both the dysontogenic characteristics and the origin of this tumor from the salivary gland[2].

Sialoblastoma should be remembered in the differential diagnosis of childhood facial tumours and an early diagnosis should be made with an assessment of malignancy.

Case Presentation and Investigations

- **Clinical presentation:** A two-month-old male child presented with a soft tissue nodular mass in the left submandibular region since birth.
- **Radiology:** CECT scan revealed a lobulated well defined isodense lesion measuring 4.7x3x2.6 cm with moderate post contrast enhancement in left submandibular region. No intralesional calcification or necrosis was seen.
- **Excision biopsy:** Showed a well encapsulated nodular mass measuring 4.5x3.5x3 cms with a bosselated outer surface and a grey white to tan cut surface.

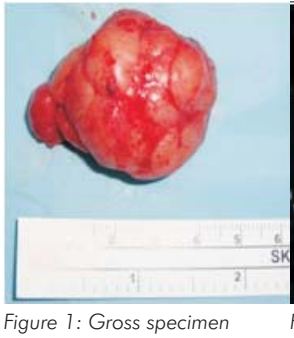

Figure 1: Gross specimen

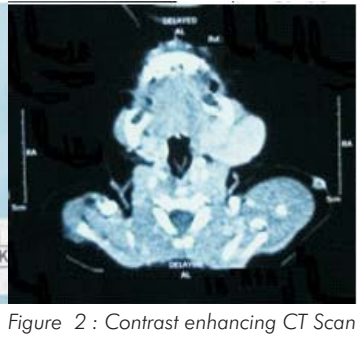

Figure 2 : Contrast enhancing CT Scan

- **Microscopy:** Sections showed a well circumscribed and partly encapsulated tumour composed of islands and broad trabculae of basaloid cells with some peripheral palisading. The cells had round-oval nuclei and delicate nuclear chromatin. No significant nuclear pleomorphism or necrosis was seen. These cells were demarcated by fibrous stroma. Mitotic count was about 2-3/10 hpf. There was no evidence of

perineural or perivascular invasion. No normal salivary gland tissue was seen.

- **Immunohistochemistry:**

Pan Cytokeratin	:	Positive
P63	:	Positive in abluminal cells.
Calponin	:	Positive in abluminal cells.
Cytokeratin 7	:	Positive in luminal cells.
Ki-67	:	Positive 4-5%, mainly in myoepithelial cells.
SMA	:	Positive in abluminal cells.
AFP	:	Negative.

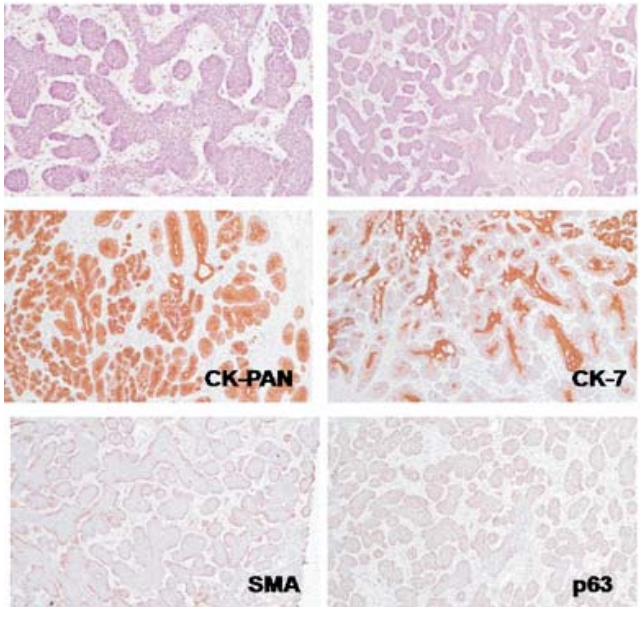

Figure 3: H&E & IHC

Differential Diagnosis

- Adenoid cystic carcinoma
- Basaloid monomorphic adenoma [3]

Treatment

Due to the limited number of cases, definitive treatment guidelines have not yet been established. Early complete surgical excision remains the cornerstone of the surgical management of sialoblastoma, whereas radiotherapy and chemotherapy remain controversial. Since the disease mostly occurs in childhood, the use of radiotherapy may be limited, due to radiation-related side effects[2].

Discussion

Williums et al[5] studied the clinicopathological and immunohistochemical features of seven cases from the files of the Armed Forces Institute of Pathology. According to their study, there is a male to female ratio of 4:3 and age ranging from prenatal to six months at the time of presentation. Five lesions originated from the parotid gland; two lesions were from the submandibular gland. All lesions presented as nodular to multinodular increasing swellings and ranged in size from 2.0 to 7.0 cm.

Two histologic patterns with differing behaviour predominated:

1. A favourable pattern had semiencapsulation of cytologically benign basaloid tumour cells with intervening stroma; and
2. An unfavourable histology of anaplastic basaloid tumour cells, minimal stroma, and broad pushing to infiltrative periphery.

Batsakis and colleague proposed histologic criteria for assessment of malignancy in a sialoblastoma, which included:

1. Invasion of nerves or vascular spaces and
2. Ancillary findings of necrosis and cytological atypia beyond that expected or presumed for an embryonic epithelium [4].

Outcome and Follow Up

The follow-up should be frequent and prolonged. AFP may be a useful marker of tumor response in patients with sialoblastoma [2]. Surgical excision with negative margin is mainstay of treatment, yet in unresectable case brachytherapy has been used successfully. Inspite of rapid growth potential, prognosis is good; no death has been reported due to metastasis.

Learning Points/ Take Home Message

1. This pediatric neoplasm should be recognized by otolarygologists and pathologists as it may be aggressive and potentially malignant and should be considered in the differential diagnosis of pediatric salivary gland swellings.
2. Patterns favouring malignancy should be recognized and noted.
3. Complete surgical excision is prudent and the patient must be followed up for long term to detect any local recurrence or systemic metastasis.

References

1. Vawter GF, Tefft M. Congenital tumors of the parotid gland. Arch Pathol 1966;82:242-5.
2. Sitthichaiyakul et al: Sialoblastoma Of The Cheek: A Case Report And Literature Review, Molecular And Clinical Oncology, 4: 925-928, 2016.
3. Aggarwal R, Bhalla S, Chopra P, Kulshreshtha R. Congenital sialoblastoma: A case report and review of literature.J Orofac Sci 2013;5:135-137.
4. Choudhary, et al.: Sialoblastoma: A literature review National Journal of Maxillofacial Surgery, Vol 4, Issue 1, Jan-Jun 2013.
5. Williams SB, Ellis GL, Warnock GR. Sialoblastoma: A clinicopathologic and immunohistochemical study of 7 cases. Ann Diagn Pathol. 2006; 10: 320-6.

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Persistent Mullerian Duct Syndrome

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Abstract
Persistent Mullerian Duct Syndrome (PMDS) is a rare form of disorder of sex development in which Mullerian duct derivatives (fallopian tubes, uterus and the proximal vagina) are present in an otherwise normally differentiated 46 XY male. In the majority of cases, PMDS is a surprise finding either during orchidopexy or during inguinal hernia repair. We report a case of 55-year-old male presenting with right inguinal hernia since more than 10 years. The clinical presentation, pathology, management of this disorder is discussed herewith.

Keywords: Persistent Mullerian duct syndrome (PMDS).

Introduction
PMDS, previously also known as hernia uteri inguinale is a relatively rare variety of disorder of sex development. Patients are phenotypically male and have 46 XY karyotype. As the name suggests Mullerian remnants (fallopian tubes, uterus and the proximal vagina) are present in an otherwise normal male. Anatomically, PMDS is divided into three categories[1].In our case, the PMDS variety was of male type I where the uterus with cervix and the right testis embedded in the broad ligament of uterus formed the contents of right inguinal hernia while the left testis was retractile along the inguinal canal.

Case Presentation
A 55-year-old male, father of two children, presented with right inguinal swelling since more than ten years. The patient underwent surgery for the same. Intraoperatively, direct right inguinal hernia protruding through the inguinal ring was seen. The contents of hernial sac were sent for histopathological examination.

Gross Findings: The specimen of hernial sac showed a uterus with cervix measuring 8x6x3.5 cms. Cut surface of uterine body showed poorly developed endometrial cavity with the surrounding grey white firm myometrial tissue. Cervix showed endocervical canal, although no ectocervix was identified.Broad ligament tissue on one aspect showed a poorly developed testis measuring 3.5x2.5.1 cms bearing a spermatic cord measuring 3 cms in length.No ovarian tissue or fallopian tube was grossly identified. (Figure 1)

Figure 1-Gross picture of the specimen shows testis (thin arrow to the right), the uterine body (block arrow on the top) and the cervix (the arrowhead).

Microscopy: Sections from the uterine body showed tubular compact endometrial glands and unremarkable myometrium. Sections from cervix showed unremarkable endocervical surface epithelium and underlying mucous glands.Sections from testis showed poorly developed seminiferous tubules and Leydig cell hyperplasia with rete testis tubules and poorly formed epididymal tubules. Sections from spermatic cord show fibrocollagenous tissue displaying congested tubules,although vas deferens is identified.(Figure 2)

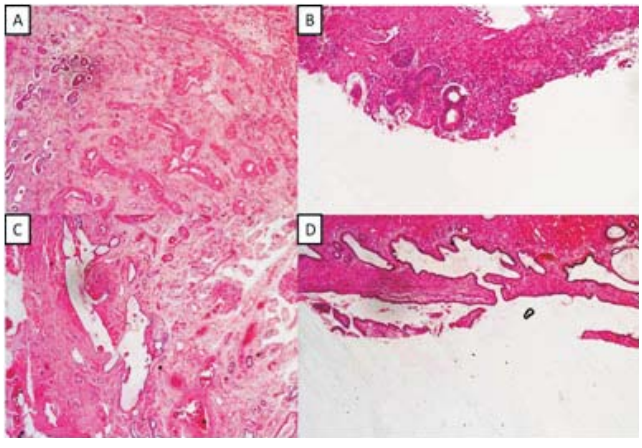

Figure 2-{A}H&E 10X view shows endometrial glands and myometrium; {B}H&E 20X view shows tubular endometrial glands; {C}H&E 20X view shows poorly developed seminiferous tubules with leydig cell hyperplasia and epididymal tubules; {D}H&E 20X view show epithelium with endocervical surface epithelium with underlying mucous glands

Discussion
PMDSis a rare form of internal male pseudohermaphroditism caused by a deficiency of MIF[2,3]. Derivatives of the Mullerian duct (i.e. fallopian tubes, uterus, and the upper part of the vagina) are present in a genotypically and phenotypically normal male. PMDS patients have normal development of external genitalia and secondary sexual characteristics.

In a human fetus the Mullerian and Wolffian ducts are both present at 7 weeks of gestation. In a male fetus, the testis differentiates by the end of the 7th gestational week. Normal sex differentiation is controlled by testosterone, dihydrotestosterone, and MIF. Sertoli cells secrete MIF, which leads to regression of the Mullerian ducts. Testosterone has a direct effect on the Wolffian ducts, and promotes their differentiation into the epididymis, vas deferens, and seminal vesicles[3]. Dihydrotestosterone induces male differentiation of external genitalia. PMDS patients have both Wolffian and Mullerian duct structures due to a deficiency of MIF.

Two anatomic variants of PMDS have been described, the

male type and the female type. The most common variant is the male form, encountered in 80-90% of cases and characterized by unilateral cryptorchidism with a contralateral inguinal hernia. The male form of PMDS can be of two types. The first type is hernia uteri inguinalis, which is usually characterized by a descended testis and herniation of the ipsilateral corner of the uterus and the ipsilateral fallopian tube into the inguinal canal[3,4]. The second type is crossed testicular ectopia, which is characterized by herniation of both testes and the entire uterus and both fallopian tubes[3,4].

The second anatomic variant of PMDS, the female form, is seen in only 10-20% of cases and is characterized by bilateral cryptorchidism, with the testes fixed within the round ligaments in an 'ovarian position' with respect to the uterus[3,5]. The gonads are fixed within the pelvis[4]. The mobility of Mullerian structures is an important factor that determines the clinical presentation[3,4]. If the uterus and fallopian tubes are mobile, they may descend into the inguinal canal during testicular descent. On the other hand, if the Mullerian structures are relatively immobile, testicular descent may be impeded[3]. Other signs and symptoms of PMDS may include infertility, blood in the semen (hematospermia), and an increased risk of cancer. Cancer may develop in an undescended testicle that is not treated, or in Mullerian structures that have not been removed[1,3].

Various other abnormalities have more rarely been reported in association with PMDS including intestinal defects and kidney abnormalities[3]. Treatment for persistent Mullerian duct syndrome (PMDS) may involve surgery to place the testes within the scrotum and to remove Müllerian structures. Treatment aims to prevent the two main complications: cancer and infertility[3].

Surgery to place the testes within the scrotum (orchidopexy) is recommended due to the risk of cancer otherwise.

Conclusion

Early diagnosis and treatment of PMDS can reduce the risk of degeneration and testicular malignancy associated with prolonged cryptorchidism.

References

1. Shailesh Solanki, Gowrishankar, Vinay Jadhav, M. Narendra Babu. Female form of persistent mullerian duct syndrome: Rare entity. Urol Ann. 2015; 7(1): 104–106
2. Gutte AA, Pendharkar PS, Sorte SZ. Transverse testicular ectopia associated with persistent Mullerian duct syndrome – the role of imaging. Br J Radiol. 2008;81:E176-8.
3. Dekker HM, de Jong IJ, Sanders J, Wolf RF. Persistent mullerian duct syndrome. Radiographics. 2003;23:309–13.
4. Clemente A, Macchi V, Berretta M, Morra A. Female form of persistent müllerian duct syndrome: MDCT findings. Clin Imaging. 2008;32:314–7.

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Sialolipoma of Parotid Gland

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Abstract
Sialolipoma is a rare tumor found within both major and minor salivary glands. We report a case of a 41-year-old man presenting with swelling of the right parotid gland which turned out to be Sialolipoma. The detailed clinical findings, radiology, histopathology, management of such tumors with emphasis on the differentials and diagnostic histopathological findings have been discussed.

Keywords: Lipoma, major salivary gland, minor salivary gland, parotid gland, sialolipoma

Introduction

Benign fatty tumors of parotid gland (lipomas) are very unusual, accounting for less than 0.5% of all parotid tumors[1]. In addition to the standard (pure) lipoma of the parotid gland, other histological subtypes have been described, e.g., angiolipoma, fibrolipoma, sialolipoma (gland + mature adipose tissue), and liposarcoma. Nagao et al first coined the term sialolipoma in 2001[2]. Major gland sialolipomas most often are presented in the parotid gland (77%) and those from minor glands are most often seen in the palate (41%)[1]. Till date, 52 cases of sialolipoma have been reported in the world literature; 25 in the parotid gland, six in the submandibular gland and the rest involved the minor salivary glands[3]. We report such a rare case.

Case Presentation

A 41-year-old man presented with a 3-month history of painless slow-growing lump on the right side of the face. His past medical history was unremarkable and he denied any history of trauma or infection of the face. The swelling was 3×2 cm, non-tender, mobile, soft and well-demarcated. The facial nerve was intact, and there were no other salivary swellings or cervical lymphadenopathy. The clinical impression was right parotid swelling, most likely to be a pleomorphic adenoma or Warthin's tumor. Computed tomography (CT) with intravenous contrast revealed a 2.8×2×1.5 cm, well-demarcated, hypodense lesion with no significant contrast enhancement. The diagnosis was lipoma of the superficial lobe of the right parotid gland. Right superficial parotidectomy with facial nerve dissection and preservation was performed with uneventful post-operative course.

Gross Findings: The specimen of superficial parotidectomy measured 6.5x5x1.5 cms. External surface was unremarkable. Cut surface showed a well circumscribed pale yellow lesion measuring 3x2x1.3 cms well away from the inked resection margins.

Microscopy: Sections showed salivary gland tissue showing a circumscribed neoplasm comprising of mature adipocytes with entrapped intercalated ducts and atrophic acini. Inked surfaces were unremarkable. No evidence of cellular atypia or malignancy was seen. (Figure 1 A-D)

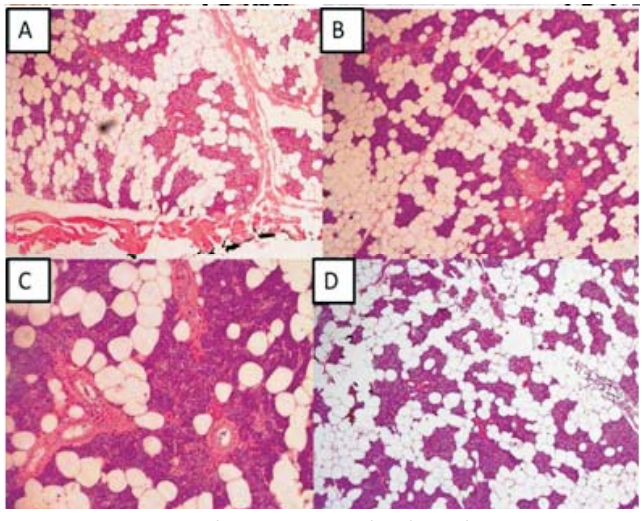

Figure-1(A) H&E 10X shows an encapsulated neoplasm. Figure 1(B & D)H &E 20 X and 1(C) H & E 40 X showing a benign neoplasm comprising of predominantly mature adipose tissue with entrapped salivary acini and ducts suggestive of Sialolipoma.

Discussion

Benign fatty tumors of parotid gland (lipomas) are very unusual, accounting for less than 0.5% of all parotid tumors. Parotid lipomatous tumors are classified into several histological variants. The standard (true) lipoma is the most common type. Sialolipoma, on the other hand, is very rare.Only 52 cases of sialolipoma have been reported in the world literature[2,3]. It is more frequently seen in the parotid gland (77%) and those from minor glands are most often seen in the palate (41%) [1]. Parotid sialolipoma can affect children and adults with mean age of 47 years (range: 18-74 years). The tumor has a small male preference. Parotid sialolipoma usually presents as a painless slowly growing soft mobile well-demarcated lump with intact facial nerve in an otherwise healthy patient[3].

Histologically, the tumours are characterized by a well circumscribed mass composed of glandular tissue and mature adipose elements. The adipose elements in the tumours arising in the parotid gland are usually more abundant than those arising in the minor salivary gland. The glandular components consisted of ductal, acinar, basal and myoepithelial cells, and closely resembled the cellular and structural compositions of normal salivary gland tissues[2]. In addition to the classical histological features of sialolipoma described by Nagao et al other

features like sebaceous differentiation, nerve bundles, oncocytic cells, duct ectasia, lymphocytic infiltration, periductal fibrosis and inflammation have also been noted[3].

Akrish et al. hypothesized that pathogenesis of sialolipoma may be associated with some form of salivary gland dysfunction, leading to altered salivary gland configuration. This concept is favored microscopically by replacement of the normal salivary gland tissue with mature adipose tissue admixed with atrophic salivary glandular elements, and/or chronic ductal epithelial changes (oncocytic metaplasia, fibrosis and lymphocytic infiltrate). Presence of similar histological findings in other conditions related to salivary gland dysfunction, for example, sialadenosis, senile, and reactive salivary gland changes further supports the above argument[4].

The treatment is standard superficial parotidectomy. There was only once recurrence out of 25 cases reported [5]. But due to rare occurrence and presence of other histological features described above the further description of such cases is warranted.

Conclusion

Sialolipoma should be included in the differentials of painless parotid swelling. Clinicians should be mindful of the possibility of sialolipoma, especially when CT scanning shows a well circumscribed fat-like tissue within the parotid gland.

References

1. Qayyum S, Meacham R, Sebelic M, Zafar N. Sialolipoma of the parotid gland: Case report with literature review comparing major and minor salivary gland sialolipomas. J Oral Maxillofac Pathol 2013; 17(1): 95–97.
2. Nagao T, Sugano I, Ishida Y, Asoh A, Munakata S, Yamazaki K et al. Sialolipoma: A report of seven cases of a new variant of salivary gland lipoma. Histopathology. 2001;38:30–6.
3. Eldamati A, Niaz R, Tanveer S. Sialolipoma of the Superficial Lobe of the Parotid Gland: A Case Report and Literature Review. Saudi Med Med Sci.2016;4:38-41.
4. Akrish S, Leiser Y, Shamira D, Peled M. Sialolipoma of the salivary gland: Two new cases, literature review, and histogenetic hypothesis. J Oral Maxillofac Surg. 2011;69:1380–4.
5. Lee PH, Chen JJ, Tsou YA. A recurrent sialolipoma of the parotid gland: A case report. Oncol Lett 2014;7:1981-983.

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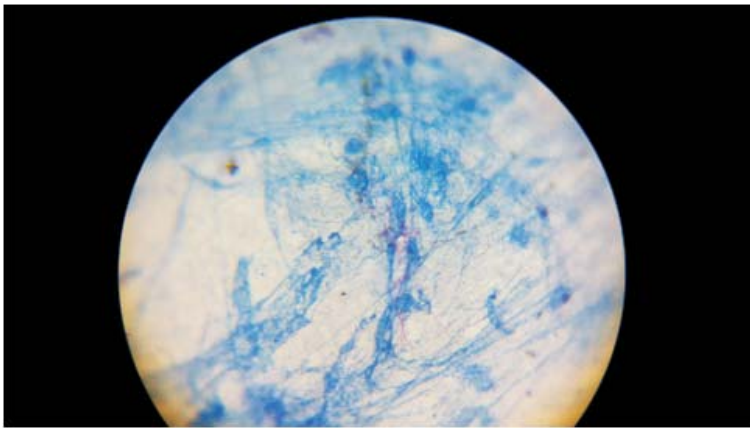
Make a Diagnosis

Modified Ziehl Neelsen staining with 1% sulphuric acid in pus specimen of HIV affected individual. Give probable diagnosis.



Contributed by

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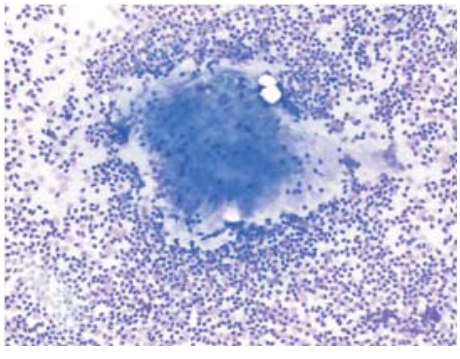
Make a Diagnosis

History – 28 years, male; FNAC submandibular lymph node.
What is the probable diagnosis?



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Answer for 'Make a Diagnosis' Photo Quiz (June 2017)

The stool sample came for identification of parasite from Tanda, Himachal Pradesh.
What is the diagnosis?

Pork Tapeworm

SRL Activities

Recent Tests Released

Test	Specialty	Significance
Autoimmune Encephalitis Panel, IFA(Anti NMDAR, Anti-AMPA1/A2, Anti-GABARB1/B2, Anti - LGI1, Anti CASPR2 and Anti-DPPX)	Neurology	Autoimmune encephalitis (AE)is significant in diagnosis, treatment planning and prognostic evaluation in the spectrum of brain illnesses related to malfunctions of the immune system.There are at least fifteen types of AES. Detection of specific autoantibodies establishes a definite diagnosis of AE, identifies immunological subtypes of AE, and assists in the differential diagnosis of atypical clinical cases.
Anti VGKC Antibodies, IFA (Anti-LGI1 and Anti-CASPR2)	Neurology	Cases of encephalitis with PNV negative report are often being investigated further for autoimmune causes. This test helps facilitate reflex testing in the increasing number of such cases of suspected AES.

Recent Publications

1. *Subhra Dhar, Lalthleng Liani. Kamlakar Patole,Sandipan Dhar.* **Cutaneous plasmacytosis: A rare entity with unique presentation.** Indian J Dermatol Venereol Leprol 2017;83:673-6'
2. *Sangeet Bhaumik, Firoz Ahmad, Bibhu Ranjan Das.* **Molecular Binary Classification of NSCLC: miR-375 is a potential biomarker to differentiate SQCC from ADCC in Indian NSCLC patients.** *Applied Cancer Research 2017; 37: 28-137*
3. *Bhandari Prerana, Ahmad Firoz, Das B R.* **Molecular profiling of gene copy number abnormalities in key regulatory genes in high-risk B-lineage acute lymphoblastic leukemia: frequency and their association with clinicopathological findings in Indian patients.** *Med Oncol. 2017 May; 34(5):92.*
4. *Neeraj Garg, Ritu Chadha, Alka G Girotra, Swarna Mandava and Vinod Raina.* **Acquired marked elliptocytosis in myelodysplastic syndrome: possible association with deletion (20Q).** *International Journal of Innovative and Applied Research 2017; Volume 5, Issue 8: 47-50*
5. *Dhruv Jain, Gargi Tikku, Pallavi Bhadana, Chandrashekhar Dravid, Rajesh Kumar Grover (2017).* **A semi-quantitative World Health Organization grading scheme evaluating worst tumor differentiation predicts disease-free survival in oral squamous carcinoma patients.** *Annals of Diagnostic Pathology 2017; Volume 29, August 2017, Pages 1-6*
6. *Dhruv Jain, Gargi Tikku, Pallavi Bhadana, Chandrashekhar Dravid, Rajesh Kumar Grover.* **The Impact of Peritumoral Retraction Clefting & Intratumoral Eosinophils on Overall Survival in Oral Squamous Carcinoma Patients.** *Pathol Oncol Res. 2017 Oct 18. doi: 10.1007/s12253-017-0328-x. [Epub ahead of print]*
7. *Kokate P, Dalvi R, Koppaka N, Mandava S.* **Prognostic classification of MDS is improved by the inclusion of FISH panel testing with conventional cytogenetics.** *Cancer Genet. 2017 Oct;216-217:120-127. doi: 10.1016/j.cancergen.2017.05.004. Epub 2017 Aug 16*
8. *Bansal N, Rastogi M.* **An Itchy Experience - PFIC 3 masquerading as Wilson's disease; Learning from mistakes.** *Onchology, Gastroenterology and Hepatology Reports. 2017;6(1):67-71.*
9. *Bansal N.* **Cell-block in EUS Guided FNA- Best method in a resource constraint setting?** *Journal of Histology and Cytology 2017;8:47.*

10. *Bansal N, Farooq A.* **Extensive Giant Inflammatory Pseudopolyposis in Ulcerative Colitis.** *Journal of Hepatology and Gastrointestinal Disorders 2017; 3(4):1000154*

11. *Pankaj Srivastava1, Prafull Kumar Arya, H. S. Khetarpal,* ***Kavita Shrivastava****, Pawan Kumar Singh5"* **Spectrum of Benign Breast Diseases in Tertiary Care Hospital of Punjab"** *Journal of Medical and Dental Sciences, 2017;6(79):5602-5606*

12. *Bansal N, Rastogi M, Wadhawan M, Vij V, Kumar A.* **Reterospective analysis of post transplant liver biopsies-from diagnosis to therapy- can we guide further? -experience from a tertiary care center.** *Indian journal of transplantation 2017;11(3):138-142.*

13. *Bansal Gupta, Nalini; Kumar, Ajay; Chaurasiya, Vishal; and Arif.* **Intrahepatic Cholangiocarcinoma with Associated Traumatic Neuroma: An Etiological Hypothesis.** *EC Gastroenterology and Digestive System 2.2 (2017): 288-291.*

14. *Bansal N, Wadhawan M, Khan A and Vij V.* **Acute Fatty Liver of Pregnancy with Mucormycosis of Bowel: A Rare Case Report.** *EC Gastroenterology and Digestive System 4.3 (2017): 101-104.*

15. *Gupta PK, Saini J, Sahoo P, Patir R,* ***Ahlawat S****, Beniwal M, Thennarasu K, Santosh V, Gupta RK.* **Role of Dynamic Contrast Enhanced Perfusion MRI in grading of pediatric brain tumors on 3T.** *Pediatr Neurosurg DOI: 10.1159/000479283.*

16. *Sahoo P, Gupta RK, Gupta PK, Awasthi A, Pandey CM, Gupta M, Patir R, Vaishya S,* ***Ahlawat S****, Saha I.* **Diagnostic accuracy of automatic normalization of CBV in glioma grading using T1-weighted DCE-MRI.** *J Magn Reson Imaging. 2017;44:32-37*

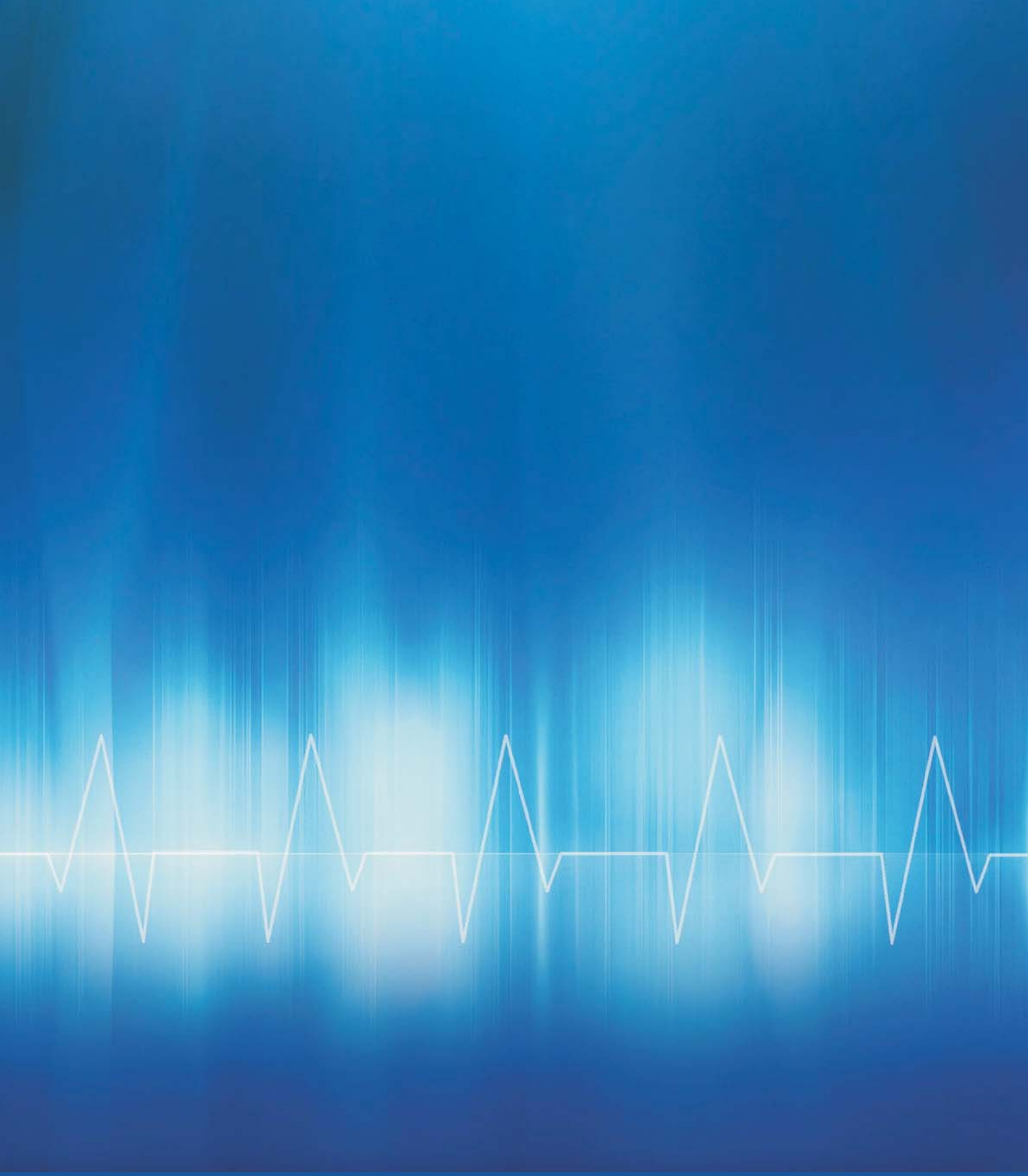
17. *Gupta L, Gupta RK2, Postma AA, Sahoo P, Gupta PK, Patir R, Ahlawat S, Saha I, Backes WH.* **Advanced and amplified BOLD fluctuations in high-grade gliomas. J Magn Reson Imaging.** *2017 Sep 30. doi: 10.1002/jmri.25869. [Epub ahead of print]*

18. *Aparna A. Bhanushali, Kumari Himani, Pradeep K. Patra and Bibhu R. Das.* **Hb F Levels in Indian Sickle Cell Patients and Association with the HBB Locus Variant rs10128556 (C>T), and the HBG XmnI (Arab-Indian) Variant** *HEMOGLOBIN, 2017,* **https://doi.org/10.1080/03630269.2017.1414059**

19. *Tiwari P, Hazarika N,* ***Ahlawat S****, Sen IB, Shirshi N.* **Paecilomyces as a Cause of Lymph Nodes Enlargement in Hodgkin's Lymphoma.** *Indian J Pediatr. 2017 Nov;84(11):881-882. doi: 10.1007/s12098-017-2411-4. Epub 2017 Jun 29.*

20. *Vishal J, Patir R,* ***Ahlawat S****, Gupta RK.* **Role of preoperative imaging in the diagnosis of primary diffuse craniospinal leptomeningeal gliomatosis.** *Neurol India. 2017 Nov-Dec;65(6):1330-1332. doi: 10.4103/0028-3886.217995.*

21. *Saini J, Gupta PK, Sahoo P, Singh A, Patir R,* ***Ahlawat S****, Beniwal M, Thennarasu K, Santosh V, Gupta RK.* **Differentiation of grade II/III and grade IV glioma by combining "T1 contrast-enhanced brain perfusion imaging" and susceptibility-weighted quantitative imaging.** *Neuroradiology. 2017 Oct 31. doi: 10.1007/s00234-017-1942-8. [Epub ahead of print]*



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