DOI: 10.7860/JCDR/2026/89428.24216

Case Report

Pathology Section

Metastatic Mixed Germ Cell Tumour Diagnosed on Cytology with an Occult Primary: A Case Report

HB RAKSHITHA[1], SHASHWAT SINGH BHADORIA[2], K AMITA SINGH[3], D PRUTHVY KARTHEEK[4], APOORVA PANDIT[5]

ABSTRACT

Metastatic Germ Cell Tumours (GCTs) with occult primaries are rare presentations that pose significant diagnostic challenges, particularly on cytology. In the present case, a 27-year-old male presented with fever, abdominal pain, and weight loss, in whom ultrasound revealed para-aortic and inguinal lymphadenopathy without detectable testicular mass. Ultrasound-guided Fine-Needle Aspiration Cytology (FNAC) from para-aortic lymph nodes demonstrated highly atypical pleomorphic cells arranged in clusters and dispersed patterns, with high nuclear-to-cytoplasmic ratio, prominent nucleoli, multinucleation, and necrotic background, suggestive of metastatic high-grade malignancy with suspicion of GCT. Fluorodeoxyglucose Positron Emission Tomography–Computed Tomography (FDG PET-CT) showed metabolically active supraclavicular and abdominopelvic lymph nodes but no primary lesion. Excision of a supraclavicular lymph node revealed near-complete nodal replacement by tumour. Immunohistochemistry demonstrated positivity for SALL-4, CD30, and OCT3/4, with syncytiotrophoblastic cells positive for human Chorionic Gonadotropin (hCG) and Glypican-3, confirming metastatic mixed GCT comprising embryonal carcinoma and choriocarcinoma components. The patient received Bleomycin, Etoposide, and Cisplatin (BEP) chemotherapy and achieved remission but developed lung metastases after one year. This case highlights the diagnostic importance of FNAC in young males presenting with unexplained lymphadenopathy, even in the absence of an identifiable testicular mass. Mixed GCTs may mimic poorly differentiated carcinoma on cytology, and accurate diagnosis requires integration of morphology with immunohistochemistry and clinical-radiologic correlation. Early recognition is crucial, as metastatic GCTs remain potentially curable despite disseminated disease, and prompt therapy significantly impacts outcomes.

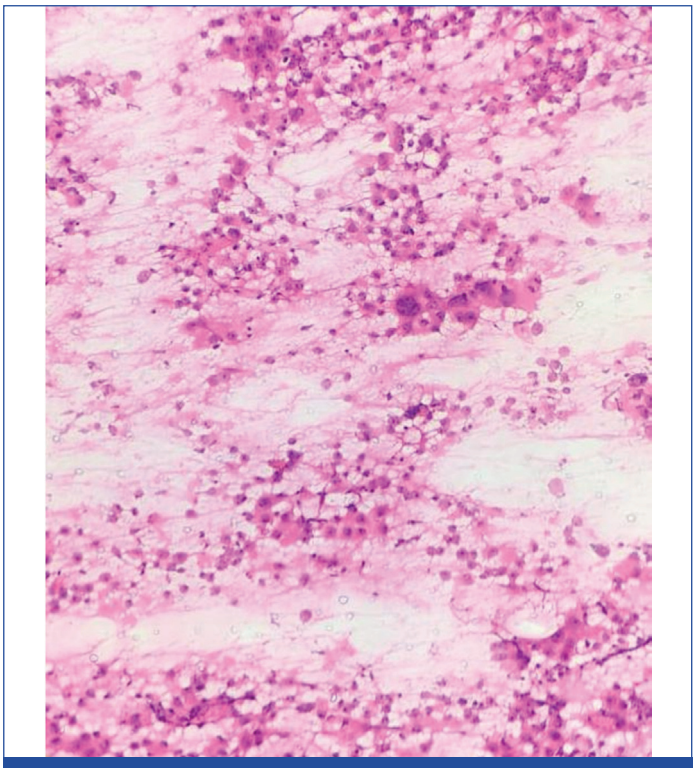
Keywords: Extragonadal presentation, Fine needle aspiration cytology, Tumour markers, Unknown primary

CASE REPORT

A 27-year-old male presented to the surgical outpatient department with complaints of fever, abdominal pain, and significant weight loss for 15 days. There was no history of vomiting, diarrhoea or past history of any chronic illnesses like tuberculosis, malignancy or any other significant comorbidity. On clinical examination, no organomegaly or palpable lymphadenopathy was noted. The patient was advised an ultrasound of the abdomen, which revealed para-aortic and inguinal lymphadenopathy. Subsequently, an ultrasound-guided FNAC was performed from the para-aortic lymph nodes [Table/Fig-1]. Routine investigations including complete blood count, peripheral smear, renal function test, thyroid function test and liver function tests were all within normal limits.

Beta-hCG was done which showed mild elevation i.e., 250 mIU/mL. The smears, stained with haematoxylin and eosin, showed abundant cellularity with highly atypical cells arranged in loose cohesive clusters, occasional acinar formations, and a dispersed pattern. Stromal fragments were noted in places. The individual tumour cells were markedly pleomorphic, exhibiting a high nuclear-to-cytoplasmic ratio, thickened nuclear membranes, vesicular nuclei, and multiple prominent nucleoli, with occasional macronucleoli. Bizarre tumour cells, multinucleation, nuclear streaming, and fibrin strands were also observed. The background showed extensive necrosis with mixed inflammatory infiltrate comprising lymphocytes and neutrophils. Based on these cytological findings, a diagnosis of metastatic deposits of a high-grade malignancy was made, with a possibility of a GCT [Table/Fig-1].

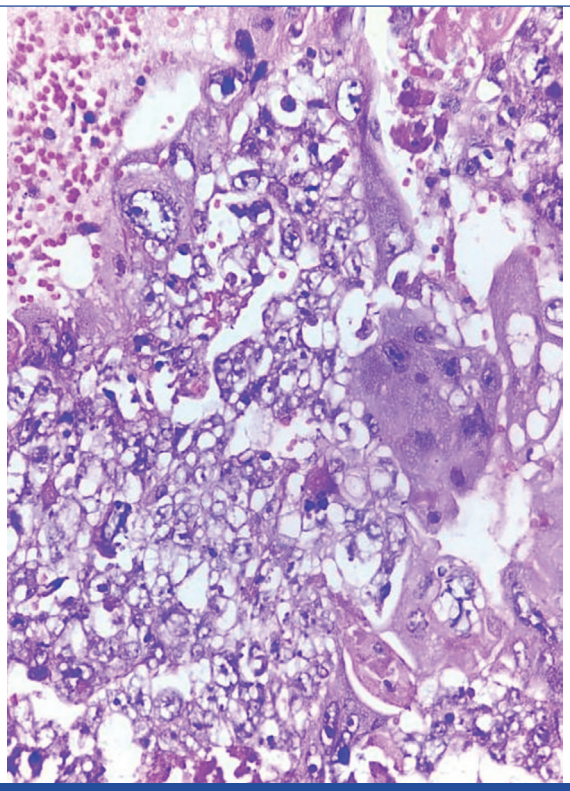
Subsequent clinical and radiological evaluation did not reveal any mass lesion in the testes. In view of the suspicion of a GCT, an FDG PET-CT scan was performed, which demonstrated multiple discrete and conglomerate metabolically active lymph nodes in the left supraclavicular and abdomino-pelvic regions, with no evidence of a primary testicular tumour. Based on these findings, a possibility of high-grade lymphoma was suggested radiologically.



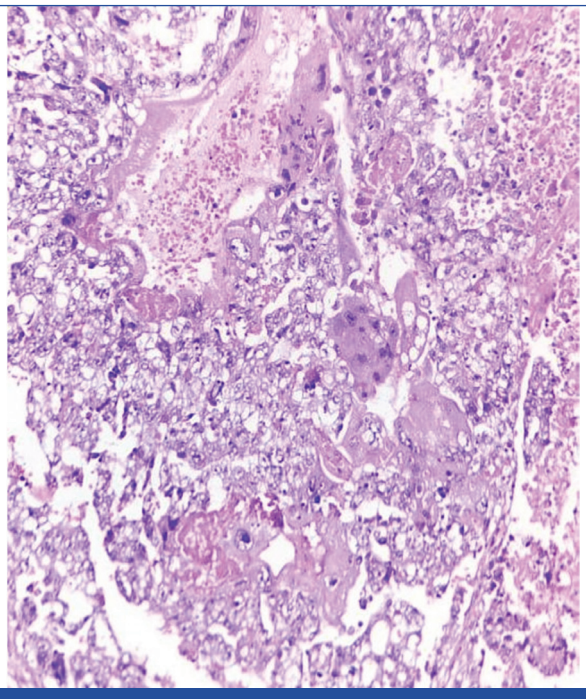
[Table/Fig-1]: Lymph Node FNAC: Pleomorphic cells with high N:C ratio, (Haematoxylin & Eosin) (10x).

A supraclavicular lymph node was subsequently excised and sent for histopathological examination. Grossly, the specimen consisted of a single grey-white mass measuring 5×3×2.8 cm, with a bosselated external surface and an intact capsule. The cut surface was variegated, showing grey-white friable areas along with haemorrhagic and necrotic regions.

Microscopic examination revealed a lymph node with a capsule and compressed lymphoid tissue at the periphery, with near complete replacement of the nodal architecture by metastatic tumour deposits [Table/Fig-2,3]. Sections studied revealed pleomorphic malignant tumour cells arranged in sheets, nests and focal glandular structures with extensive haemorrhage and necrosis. Individual tumour cells showed high N:C ratio, vesicular nuclei, irregular nuclear membranes and prominent nucleoli. Multinucleated tumour giant cells and syncytiotrophoblastic cells were identified. Taking into consideration the morphological features of cytology and histopathology, young age and clinical presentation immunohistochemical panel was applied. Immunohistochemistry showed tumour cells positive for SALL-4, CD30, and OCT3/4 (strong and diffuse), with weak focal positivity for c-KIT. Syncytiotrophoblastic cells were immunopositive for human Chorionic Gonadotropin (hCG) and glypican-3. The tumour cells were negative for CK7, CK20, and Alpha-Fetoprotein (AFP). Based on these findings, a final diagnosis of metastatic mixed GCT, comprising embryonal carcinoma and choriocarcinoma components, was made.



[Table/Fig-2]: Histopathology Slide: syncytial cells and cells with pale to clear cytoplasm (Haematoxylin & Eosin) (10x).



[Table/Fig-3]: Histopathology Slide: syncytial cells and cells with pale to clear cytoplasm. (Haematoxylin&Eosin) (40x).

The patient subsequently received three cycles of BEP chemotherapy and achieved remission. However, after one year, he developed lung metastases. Patient was started on second-line chemotherapy and is under follow-up.

DISCUSSION

The GCTs are aggressive neoplasms affecting predominantly young males and may occasionally present with metastatic disease before identification of the primary lesion [1]. Cytological diagnosis of metastatic mixed GCTs is often difficult because these tumours may mimic poorly differentiated or undifferentiated carcinomas on FNAC [2].

The present case demonstrated isolated lymphadenopathy without an identifiable testicular mass, consistent with previously described occult or "burned-out" GCTs. Histologically, the presence of syncytiotrophoblastic cells supported choriocarcinomatous differentiation, similar to findings described by Ulamec M et al., [3]. Kumar SV et al., also described metastatic mixed GCTs containing embryonal carcinoma components with extensive metastatic spread in young males [4]. Extragonadal and metastatic presentations of GCTs remain diagnostically challenging. Ronchi A et al., emphasised the importance of clinicopathological correlation in identifying metastatic disease from occult primaries [5]. Islam SR et al., reported metastatic mixed GCT presenting with pulmonary metastases, highlighting the aggressive metastatic potential of these tumours [6]. Talluri S et al., further discussed the diagnostic complexity associated with unusual mixed GCT variants [7].

The phenomenon of occult primary or "burned-out" testicular tumours has been increasingly recognised. Shahrokh S et al., reported retroperitoneal lymphadenopathy as the presenting manifestation of an occult testicular GCT, similar to the presentation in the current case [8]. Immunohistochemistry plays a crucial role in confirming the diagnosis. BîcăO et al., demonstrated the importance of markers such as SALL4 and OCT3/4 in identifying mixed GCTs and assessing metastatic potential [9].

CONCLUSION(S)

The FNAC remains a valuable first-line diagnostic modality in young males presenting with unexplained lymphadenopathy. However, due to the marked histological heterogeneity of mixed GCTs, cytomorphology alone may be insufficient for definitive diagnosis. Correlation with radiological findings, serum tumour markers, and immunohistochemistry is essential for accurate diagnosis and timely treatment.

REFERENCES

[1] Dagli AF, Pehlivan S, Cihangiroglu G, Ozercan MR. Cytology of mixed germ cell tumor with mediastinal metastasis. J Cytol. 2009;26(3):120-22.
[2] Raj JA, Sharmila PS, Mahanthachar V, Rajaram T. Metastatic testicular mixed germ cell tumours: A diagnostic dilemma in cytology. J Cytol. 2013;30(2):90-95.
[3] Alvarado-Cabrero I, Hernández-Toriz N, Paner GP. Clinicopathologic analysis of choriocarcinoma as a pure or predominant component of germ cell tumor of the testis. Am J Surg Pathol. 2014;38(1):111-18. Doi: 10.1097/PAS.0b013e3182a2926e. PMID: 24145647.
[4] Kumar SV, Naik MB, Harshvardan MSR, Lakshmi AB. Mixed germ cell tumour of testis: A case report with review of literature. Int J Res Med Sci. 2017;3(1):327-30.

[5] Ronchi A, Cozzolino I, Montella M, Panarese I, Zito Marino F, Rossetti S, et al. Extragonadal germ cell tumors: Not just a matter of location. A review about clinical, molecular and pathological features. Cancer Med. 2019;8(16):6832-40.
[6] Islam SR, Raza M, Sarkar SA, Poran S, Rahman M. Metastatic mixed germ cell tumor presented with hemoptysis: A case report. J Surg Case Rep Images. 2020;3(1):017.
[7] Talluri S, Goedde MA, Coventry S, Rosenberg E, Canalichio KL, Peppas D, et al. Case Report: Rare Presentation of Mixed Germ Cell Tumor in an Infant. Front Pediatr. 2021;9:729917.
[8] Shahrokh S, Hebert M, Jeong W, Guo S. Burned-out testicular germ cell tumor presenting as retroperitoneal lymphadenopathy in a patient With cryptorchidism: A case report & review of literature. Cureus. 2022;14(7):e26776.
[9] Bîcă O, Ciongradi CI, Benchia D, Sârbu I, Alecsa M, Cristofor AE, et al. Assessment of molecular markers in pediatric ovarian tumors: Romanian single-center experience. Int J Mol Sci. 2024;25(12):6752.

PARTICULARS OF CONTRIBUTORS:
1. Professor, Department of Pathology, Adichunchunagiri Institute of Medical Sciences, B.G. Nagara, Karnataka, India.
2. Junior Resident, Department of Pathology, Adichunchunagiri Institute of Medical Sciences, B.G. Nagara, Karnataka, India.
3. Professor and Head, Department of Pathology, Adichunchunagiri Institute of Medical Sciences, B.G. Nagara, Karnataka, India.
4. Junior Resident, Department of Pathology, Adichunchunagiri Institute of Medical Sciences, B.G. Nagara, Karnataka, India.
5. Assistant Professor, Department of Pathology, Adichunchunagiri Institute of Medical Sciences, B.G. Nagara, Karnataka, India.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:
Dr. K Amita Singh,
Professor and Head, Department of Pathology, Adichunchanagiri Institute of Medical Sciences, Adichunchanagiri University, B.G. Nagara, Mandya-571448, Karnataka, India.
E-mail: dr.amitay@gmail.com

PLAGIARISM CHECKING METHODS: [Jain H et al.]
- Plagiarism X-checker: Apr 14, 2026
- Manual Googling: Jun 10, 2026
- iThenticate Software: Jun 12, 2026 (1%)

ETYMOLOGY: Author Origin

EMENDATIONS: 8

AUTHOR DECLARATION:
- Financial or Other Competing Interests: None
- Was Ethics Committee Approval obtained for this study? Yes
- Was informed consent obtained from the subjects involved in the study? Yes
- For any images presented appropriate consent has been obtained from the subjects. Yes

Date of Submission: **Mar 31, 2026**
Date of Peer Review: **Apr 24, 2026**
Date of Acceptance: **Jun 14, 2026**
Date of Publishing: **Aug 01, 2026**