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An Enigmatic Emergence: The Occurrence of Immature Teratoma in Adulthood

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ABSTRACT
Immature Teratoma is a rare tumor and is usually not seen in adulthood and males. This case report is of a 65-year-old male with an inguinal mass. Surgical resection was done, and on histopathological examination was diagnosed with Immature Teratoma. Immature elements such as primitive morphology, fetal cartilage, and rosette formation were seen. The surgical margins were free. Immature Teratomas are germ cell tumors with varying amounts of immature tissue typical of neuroectodermal origin. A definitive diagnosis can be made only after surgical resection and histologic evaluation. Scanning modalities like ultrasonography, CT scan, and MRI coupled with surgical resection remain a mainstay. Immunohistochemistry has a limited role in such cases. More screening and awareness programs need to be initiated for such rare entities.
Keywords: Immature Teratoma, primitive, tumor, neuroepithelium

I. INTRODUCTION

Immature Teratoma is a rare tumor that accounts for 1% of all teratomas [1]. It may occur in a pure form or as a component of mixed germ cell tumors and usually presents in the first two decades of life [2]. But here, we see a case report of Immature Teratoma presenting in an unsual location in an elderly male.

II. CASE REPORT

A 65-year-old male presented with an inguinal mass. An excision biopsy was done, and the sample was sent for histopathological examination.

Gross examination [Figure 1a] showed a brownish-white skin-covered nodular specimen measuring 6x3x1 cm. The cut section [Figure 1b] showed an ill-circumscribed mass with margins appearing free. Areas of necrosis and hemorrhage were seen.

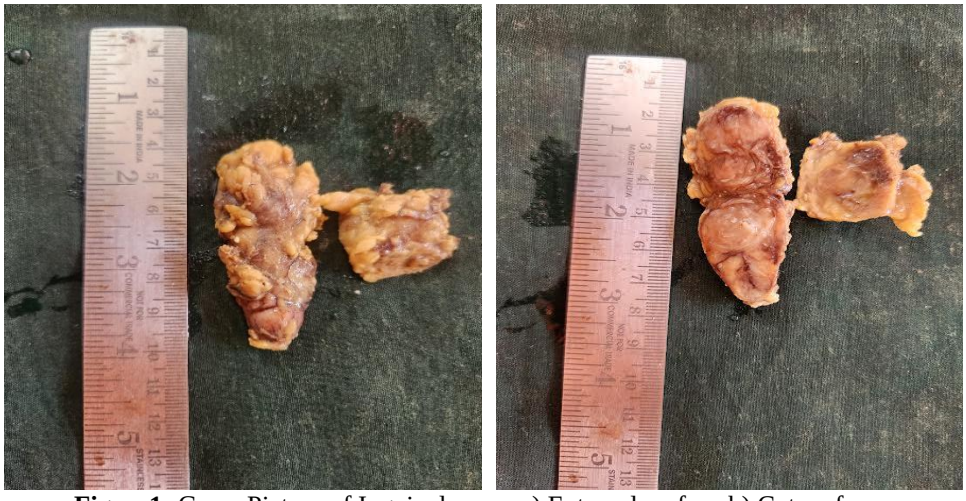

Figure1: Gross Picture of Inguinal mass. a) External surface b) Cut surface

On microscopy, immature elements were seen comprising of spindled cells appearing primitive with scant cytoplasm and hyperchromatic nuclei. Rosette formation[Figure 2] and primitive tubular elements were also seen. Extensive areas of necrosis and hemorrhage were seen [Figure 3].

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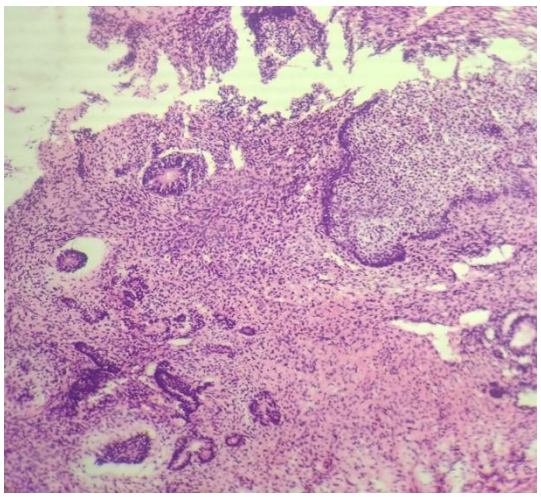

Figure2: Immature cartilage (upper right) with primitive morphology and rosette formation

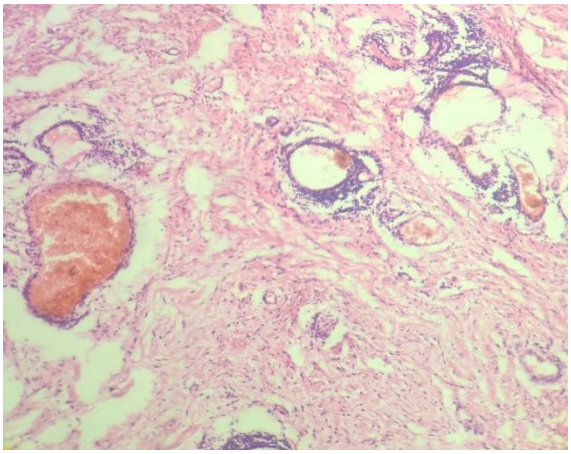

Figure 3: Primitive morphology with areas of necrosis and hemorrhage

III. DISCUSSION

Immature Teratomas are germ cell tumors with varying amounts of immature tissue typical of neuroectodermalorigin[1]. It is rarely seen in males and adults. Incidence is 2.3 per 1 lakh patients [3].

The extragonadal distribution is as follows, in descending order: Mediastinum (Anterior), retroperitoneum, presacral and coccygeal areas, pineal and extra-pineal intracranial sites, neck and abdominal visceral areas [2].

They constitute about one-third of the germ cell tumors in the world [1].

It is due to abnormal differentiation of fetal germ cells. There are no known causative factors as etiology[4].

Diagnosis is based on clinical, radiological, and laboratory findings:

Rapidly enlarging mass with mildly elevated alpha-fetoprotein (higher levels suggest yolk sac tumor) and typical radiological findings of a large and irregular solid component that may have coarse calcifications are usually seen [3]. Ultrasound and CT scans can differentiate between solid and cystic areas, with CT scans differentiating solid components better between adipose tissue [5]. MRI can detect encasement and invasion of blood vessels [1].

Older age at diagnosis, higher stage, and grade lead the patient to a worse prognosis [2]. The recurrence rate is higher in higher grades of the tumor, especially with the presence of peritoneal (gliomatosis peritonei) and lymph node deposits [6].

A definitive diagnosis can be made only after surgical resection and histologic evaluation [1]. Resected teratomas have been seen to have a better prognosis if in a lower grade and stage of disease in comparison to irresectable teratomas [7].

On histopathology, grossly, a tumorous mass is seen, usually with solid and cystic areas with areas of hemorrhage and necrosis [2].

On microscopy, variable amounts of mature and immature elements, mostly of neuroectodermal origin, may be seen. Immature spindled neuroepithelium (sarcomatous) with rosette, pseudo rosette, and primitive tubule formation may be seen [1].

Primitive cells have scant cytoplasm, hyperchromatic nuclei, and frequent mitosis, which helps to differentiate immature components from mature brain tissue [5].

Fetal cartilage may be present. Small foci of yolk sac tumor and embryonal carcinoma present change the classification of the tumor to mixed germ cell tumor[2].

Thorough sampling is required when surgically handling specimens and on the grossing table [8].

Grading system[9]:

It is based on low aggregated amounts of immature epithelium in any one slide and the number of low-power microscopic fields.

Grade 1: < or =1 low power field (4x power objective)

Grade 2: >1 but < or =3 low power fields in any one slide

Grade 3: >3 low power fields in any slides

Grade 2 and 3 are high-grade tumours.

On cytological examination, immature elements may rarely be observed in ascitic fluid if sampled [1].

Immunohistochemical markers have a limited role, and the markers used are as follows [10]:

Immature neuroepithelium: S100, NSE, GFAP (both immature and mature)

OCT4 is expressed in immature neural tissue in advanced cases.
Other markers: SALL4, SOX2, glypican 3
In Gliomatosis peritonei: SOX2
Neuroepithelium negative markers: CD30, Alpha-fetoprotein, PAX8, Keratin

Molecular Markers[10]**:**
i(12p) and 12p amplification may be present in immature components.

Differential diagnosis[3]**:**
1)Mature cystic Teratoma
2)Mature solid Teratoma
3)Carcinosarcoma
4)Mixed germ cell tumor

IV. CONCLUSION

Immature Teratomas are a rare entity in adult males. Scanning modalities like ultrasonography, CT scan, and MRI coupled with surgical resection remain a mainstay. Proper histopathological examination is required to rule out other differentials. Immunohistochemistry has a limited role in such cases. The patient should be followed up and investigated for recurrence. More screening and awareness programmes need to be initiated for these rare entities, which significantly negatively impact adults.

CONSENT
Written informed consent was obtained from the patient to publish this case report and accompanying images.

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Nil.
CONFLICTS OF INTEREST
There are no conflicts of interest.

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