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Editorial

# Motley and Rudimentary - Polyembryoma Testis

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Polyembryoma emerges as an extremely exceptional, mixed germ cell tumour demonstrating a predominant component of 'embryoid bodies' and simulates biological behaviour of mixed germ cell tumour. Aforesaid embryoid bodies are configured of centric core of embryonal carcinoma cells, amnion-like cavity and yolk sac tumour component. In addition to embryoid bodies, designation of 'polyembryoma' necessitates a quantifiable proportion of <10% of an additional neoplastic component articulating the polyembryoma.

Polymbryoma delineates a significant component of embryoid bodies admixed with miniscule proportion of germ cell components as teratoma, choriocarcinoma, embryonal carcinoma or yolk-sac tumour. Foci of syncytiotrophoblastic cells or hepatoid cells may be discerned. Morphologically, neoplasm appears reminiscent of embryonic yolk sac.

Tumefaction is comprised of centric core of embryonal carcinoma cells, amnion-like cavity and yolk sac tumour component preponderantly (~90%) configuring the neoplasm.

With complex morphological appearance, lobulated configuration, varying components and subtypes of germ cell tumour delineating quantifiably significant, well formed embryoid bodies appear indicative of polyembryoma.

Testicular polyembryoma preponderantly incriminates the adult population and commonly emerges between 28 years to 60 years. Neoplastic components as mature teratoma or yolk sac tumour may pre-eminently be encountered within paediatric subjects.

Bilateral testis or right and left testis are implicated in an equivalent proportion. A male preponderance is encountered [1,2].

In contrast to ovarian germ cell tumours, embryoid bodies are frequently demonstrated within testicular neoplasms . Besides, polyembryoma tumour pattern may be encountered within neoplasms as embryonal carcinoma or yolk sac tumour.

Embryoid bodies are observed in ~42% of testicular mixed germ cell tumours, ~6% of embryonal carcinomas and are variably intermingled within yolk sac tumours [1,2].

Inaccurate assessment of embryoid body component may concur with pre-eminence of embryoid bodies within 'polyembryoma' or neoplasms enunciating a predominant polyembryoma component [2,3].

Embryoid bodies are posited to represent foci of primitive neoplasia with a teratomatous component. The terminology of polyembryoma or high grade, immature teratoma with a predominant polyembryoma component may be appropriately adopted in neoplasms where embryoid bodies are typically intermingled with focal teratomatous component. Besides, invasive, non-teratomatous elements within a neoplasm configured of embryoid bodies aptly categorizes a polyembryoma within mixed germ cell tumour [2,3].

Incriminated subjects represent with gynecomastia or testicular tumefaction. Gynecomastia may occur due to an associated component of choriocarcinoma. Testicular neoplasm is associated with elevated levels of serum alfa fetoprotein (AFP) and beta human chorionic gonadotrophin (βHCG) [2,3].

Grossly, an enlarged, solid tumefaction with magnitude ≥ 6 centimetres is characteristically observed. Cut surface appears solid and haemorrhagic [3,4].

Upon low power examination, tumefaction exhibits a lobular architecture concordant to stromal component. A neoplasm with prominent lobules and configuring embryoid bodies with circumscribing dense, oedematous to myxoid stroma is enunciated.

Embryoid bodies exemplify a hyperchromatic disc delineating morphological features of embryonal carcinoma.

Neoplasm may singularly be constituted of embryoid bodies [3,4].

Oedematous stroma appears to encompass the disc of embryonal carcinoma which configures a cavity layered by yolk sac epithelium.

Polyembryoma component of the neoplasm is an 'embryoid body' which articulates a spherical to elliptical structure with centric 'germ disc' comprised of embryonal carcinoma-type of epithelium superimposed upon an attenuated, wispy layer of yolk-sac epithelium [3,4].

A cavity arises superior to the germ disc which is reminiscent of amniotic cavity whereas cavity situated inferiorly may simulate yolk-sac vesicle. Several neoplasms appear devoid of yolk-sac cavity and represent with a miniature focus of proliferating, yolk-sac epithelium < 3 millimetre magnitude commingling within adjacent stroma [3,4].

Embryoid bodies may be perfectly configured or inadequately articulated. Yolk-sac cavity may demonstrate prominent cystic configurations. Focal haemorrhage is prominent, frequently discerned and may concur with macroscopic foci of haemorrhage [3,4].

Embryonal carcinoma component of polyembryoma appears immune reactive to OCT3/4, CD30 and keratin. Yolk sac component appears immune reactive to glypican 3, alpha fetoprotein (AFP) and keratin. Tumour cells appear immune non reactive to CD117, D2-40 and placental alkaline phosphatase (PLAP) [5,6].

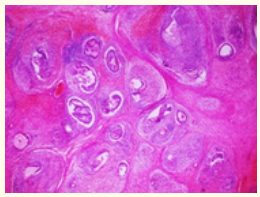

**Figure 1:** Polyembryoma delineating embryoid bodies layered by yolk-sac type of epithelium surrounded by dense, fibrotic stroma [7].

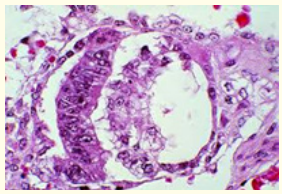

**Figure 2:** Polyembryoma enunciating embryoid bodies with centric disc like structure and layering by yolk-sac type epithelium encompassed within a dense, fibrotic stroma [8].

| Tumour type | Gross Features | Microscopy | Serum markers |
|---|---|---|---|
| Teratoma | Solid and cystic. Rokitansky protuberans shows cartilage, hair, skin, teeth etc | Derivatives of three germinal layers | βHCG, LDH, AFP normal |
| Embryonal carcinoma | Grey/white with areas of haemorrhage and necrosis | Sheets and aggregates of pleomorphic cells | βHCG normal, LDH,AFP raised |
| Yolk sac tumour | Grey/white with variable haemorrhage | Varied morphology, Schiller-Duval bodies, eosinophilic globules | βHCG, LDH normal, AFP raised |
| Choriocarcinoma | Markedly haemorrhagic | Trimorphic trophoblasts, prominent haemorrhage | βHCG raised, LDH,AFP normal |
| Seminoma | Grey/white, shiny cut surface | Nests of pleomorphic cells, prominent nucleoli, thin fibrous septa invaded by lymphocytes | βHCG, LDH raised, AFP normal |

**Table 1:** Manifestations of germ cell tumours [3,4].

βHCG: Beta human chorionic gonadotrophin, LDH: Lactate dehydrogenase, AFP: Alpha fetoprotein.

Polyembryoma requires segregation from neoplasms as the exceptional polyvesicular vitteline pattern of yolk-sac neoplasia or diffuse embryoma pattern of germ cell neoplasia. The yolk-sac vesicle of polyembryoma may demonstrate cystic dilatation. Besides, polyvesicular vitteline pattern of yolk-sac tumour may concur with embryoid bodies [5,6].

Akin to various mixed germ cell tumours demonstrating a component of teratoma, polyembryoma may be appropriately alleviated with surgical extermination. Testicular tumefaction arising in adult subjects may be eradicated by radical orchiectomy. Prepubertal tumours may be managed with testis- sparing surgical manoeuvers. Sperm preservation may be optimally adopted [5,6].

Additionally, chemotherapy with cisplatin may ameliorate therapeutic outcomes. Retroperitoneal lymph node dissection in conjunction with platinum based chemotherapy emerge as adjunctive therapeutic strategies for exterminating testicular germ cell tumours.

Radiotherapy may be beneficially employed [5,6].

Prognostic outcomes of polyembryoma appear identical to mixed germ cell tumour. Non seminomatous germ cell tumours with a component of choriocarcinoma or embryonal carcinoma are associated with inferior prognostic outcomes [5,6].

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6. Image 1 Courtesy: Pathology outlines.

7. Image 2 Courtesy: CAI.com.