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Editorial **Clinical and Medical Research and Studies** **Open Access**

Sophomoric and Metamorphosed-Immature Teratoma

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Editorial

Immature teratoma is a malignant germ cell tumour constituted of divergent mature and immature tissues along with a characteristic component of primitive neuro-ectoderm. The malignant, ovarian neoplasm demonstrates cellular genesis from embryonal germ cell layers denominated as ectoderm, mesoderm and endoderm and is comprised of variably quantifiable mature and immature tissues (1,2). Tumefaction is predominantly discerned in young females < 20 years wherein mean age of tumour discernment is ~20 years. Elderly subjects > 40 years are exceptionally incriminated(1,2). of obscure aetiology, immature teratoma emerges from anomalous differentiation of foetal germ cells(1,2). It is posited that pure mature and immature teratoma is engendered from non- transformed ovarian germ cells. Alternatively, mixed germ cell tumours demonstrating components of teratoma may evolve from associated non-teratomatous constituents(1,2). Immature teratoma exhibits peritoneal implants comprised of mature glial tissue, designated as gliomatosis peritonei. Possibly, peritoneal implants arise due to metaplasia of sub-mesothelial cells occurring as a reaction to growth factors secreted by the ovarian neoplasm(1,2). Mature glial tissue may exceptionally be discerned within lymph nodes, denominated as nodal gliomatosis and generally accompanies gliomatosis peritonei. Nodal gliomatosis exhibits superior prognostic outcomes and chemotherapy is usually unwarranted(1,2).

Mixed germ cell tumours demonstrating teratomatous and non-teratomatous components of immature teratoma exhibit amplification of chromosome i(12p) and 12p although aforesaid genetic amplifications are absent in pure immature teratoma(1,2). Grading of immature teratoma is contingent to presence of immature neuro-epithelium and is designated as •grade 0 exhibits nodules of peritoneal and lymph node gliomatosis which are constituted of mature glial tissue. •grade 1 demonstrates neuro-epithelium in < one low power field. •grade 2 enunciates neuro-epithelium in ≥ one although < three low power fields. •grade 3 delineates neuro-epithelium in ≥ three low power fields.

Grade 2 and grade 3 neoplasms constitute high grade tumefaction(1,2). Contemporary, two tiered grading system of immature teratoma is designated as •low grade tumefaction displaying < one low power field of neuro-epithelium. •high grade neoplasm demonstrating ≥ one low power field of neuro-epithelium(1,2).

Immature teratoma may be indicated in young subjects depicting a rapidly progressive adnexal tumefaction with mildly elevated AFP and typical radiological manifestations(1,2). Immature teratoma manifests with symptoms such as pain, abdominal distension, rapidly progressive tumefaction or ovarian torsion. 'Growing teratoma' syndrome expounds status of immature teratoma following institution of neoadjuvant chemotherapy and is comprised of persistence or enlargement of ovarian tumefaction along with normalization of serum biomarkers(1,2). The syndrome is posited to represent metamorphosis of tissue remnants configuring immature teratoma into mature teratoma due to institution of chemotherapy, a phenomenon designated as 'chemotherapeutic retro-conversion'. Histological examination of aforesaid syndrome demonstrates foci of mature teratoma(1,2).

Grossly, a unilateral ovarian mass with magnitude ranging from 5 centimetres to 42 centimetres and mean diameter of 16 centimetres is observed. Cut surface is predominantly solid with cystic areas, focal necrosis and haemorrhage. Contralateral ovary may demonstrate the occurrence of mature teratoma(1,2). Frozen section necessitates extensive tissue sampling from specific areas as immature tissues or soft, nodular zones configuring tumour mass(1,2). Upon cytological evaluation, immature tissue components may be observed. Nevertheless, ascites is exceptionally associated with immature tissue elements(1,2). Upon microscopy, diverse mature tissue elements arising from various germ cell layers appear commingled with predominantly immature neuro-ectodermal elements(1,2). Immature neuro-epithelium is configured of spindle-shaped or sarcomatoid cells or exhibits definitive rosettes, pseudo-rosette and primitive tubules. Tumour cells appear primitive and are imbued with scanty cytoplasm and hyperchromatic nuclei. Mitotic figures are frequently discerned(1,2). Germ cell components as embryonal carcinoma or yolk sac tumour may appear as a constituent of immature teratoma, thereby configuring a mixed germ cell tumour(1,2). Miniature foci of yolk sac tumour or embryonal carcinoma < 3 millimetre diameter may be discerned in immature teratoma and appear unrelated to disease prognosis(1,2). Neural tissue can display prominent benign vascular proliferations with configuration of Wagner-Meissner-like corpuscles. Foetal cartilage and Wagner-Meissner-like corpuscles are not contemplated as immature components of teratoma(1,2).

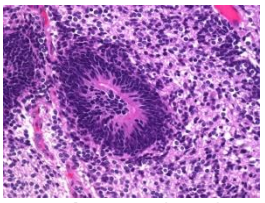

Figure 1: Immature teratoma depicting foci of immature neuro-epithelium interspersed with spherical to elliptical undifferentiated mesenchymal cells with hyperchromatic nuclei and congested vascular articulations.

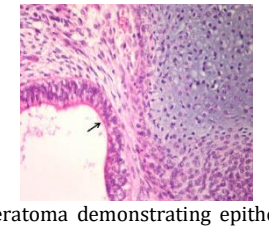

Figure 2: Immature teratoma demonstrating epithelial glands layered with stratified and pseudostratified epithelium, foci of cartilage and intermingled undifferentiated mesenchyme.

Immature neuro-epithelium is immune reactive to S100 protein, GFAP, NSE, OCT4, PAX6, SALL4, SOX2 or glypican3. Foci of gliomatosis peritonei are immune reactive to SOX2(3,4). Neuro-epithelium is immune non reactive to CD30, AFP, keratin or PAX8. Gliomatosis peritonei is immune non reactive to OCT4 or NANOG(3,4). Immature teratoma requires segregation from neoplasms such as mature cystic teratoma, mature solid teratoma, carcinosarcoma, mixed germ cell tumour as yolk sac tumour or embryonal carcinoma. Immature teratoma can be appropriately discerned with evaluation of clinical, radiological and biochemical features(3,4). Cogent histological examination is necessitated for confirmation and grading of immature teratoma. Thorough tissue sampling is necessitated for identification of immature tissue or metastatic component of immature teratoma which is associated with an inferior prognosis. Immature teratoma demonstrates minimally elevated alpha fetoprotein (AFP)(3,4). Upon computerized tomography, solid tumour component appears enlarged and irregular with foci of coarse calcification and disseminated, miniature aggregates of adipose tissue(3,4). Stage I or grade I tumefaction can be subjected to surveillance. Surgical extermination is recommended for neoplasms emerging within paediatric subjects(3,4). Cogent surgical eradication of neoplasm along with adjuvant chemotherapy is recommended for grade II or grade III lesions emerging in adult women(3,4). Initial disease discernment within the elderly or enhanced tumour stage and grade is associated with an inferior prognostic outcome. Tumour grade and tumour stage are significant prognostic factors, which appears substantially ameliorated following chemotherapy(3,4). Tumour grade significantly contributes to tumour reoccurrence. Accompanying gliomatosis peritonei or lymph node gliomatosis is denominated with manifestation of mature neural tissue and enhances possible tumour reoccurrence(3,4).

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