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Short Communication

Facsimile and Kindred-Undifferentiated Carcinoma Pancreas

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Undifferentiated carcinoma pancreas is a malignant pancreatic neoplasm devoid of definitive direction of cellular differentiation.

Now obsolete, undifferentiated carcinoma pancreas was previously designated as spindle cell carcinoma or pleomorphic carcinoma of pancreas.

Undifferentiated carcinoma pancreas simulates the genetic profile of conventional ductal adenocarcinoma pancreas.

Undifferentiated carcinoma pancreas is constituted of atypical neoplastic cells and appears devoid of glandular configurations. An absence of osteoclast-like giant cells is encountered.

Generally, neoplasm is categorized into distinctive variants as anaplastic, sarcomatoid, rhabdoid or carcinosarcoma. Prognostic outcomes are extremely inferior.

Undifferentiated carcinoma pancreas configures up to 5% of pancreatic carcinomas and is commonly encountered within elderly population within sixth decade to seventh decade. A male predominance is observed with male to female proportion of 2:1 [1,2].

Undifferentiated carcinoma pancreas commonly incriminates head of pancreas (50%), body of pancreas (45%), tail of pancreas (45%) or pancreatic parenchyma in entirety (5%) [1,2].

Undifferentiated carcinoma pancreas may significantly be engendered with preponderant epithelial to mesenchymal transformation. Besides, chronic inflammation with implication of histiocytes may not represent a crucial mechanism of malignant metamorphosis [1,2].

Rhabdoid variant of undifferentiated carcinoma pancreas demonstrates genomic alterations within KRAS and expression of SMARCB1 accompanied by possible translational implications. In contrast to conventional ductal adenocarcinoma, enriched amplification of KRAS is encountered within rhabdoid and sarcomatoid variants. Besides, genomic alterations within SMAD4 emerge as an exceptional molecular event within sarcomatoid variant, rather than within conventional ductal adenocarcinoma [2,3].

Undifferentiated carcinoma pancreas manifests with cogent clinical symptoms as hyperbilirubinemia, especially with tumours confined to head of pancreas. Besides, abdominal pain, dorso-lumbar pain, loss of weight, nausea or anaemia may ensue [2,3].

Grossly, undifferentiated carcinoma pancreas simulates conventional pancreatic ductal adenocarcinoma. Foci of cystic degeneration and necrosis may be discerned.

Upon frozen section, a hyper-cellular neoplasm constituted of atypical, undifferentiated or poorly differentiated epithelial cells is encountered.

Cytological examination depicts a hyper-cellular neoplasm comprised of disseminated and aggregated atypical, neoplastic epithelial cells [2,3].

Upon microscopy, undifferentiated carcinoma pancreas is comprised of disseminated neoplastic cells with inadequate cellular cohesion, in contrast to conventional ductal adenocarcinoma.

Undifferentiated carcinoma pancreas is a hyper-cellular neoplasm with minimal stroma and scanty desmoplastic reaction. In contrast, conventional pancreatic ductal adenocarcinoma exhibits significant desmoplastic stroma commingled with few neoplastic cells or glandular articulations. Foci of perineural invasion or vascular invasion are commonly discerned [2,3].

Cogent subtypes of undifferentiated carcinoma pancreas characteristically demonstrate variable and pathognomonic morphological features designated as

- Anaplastic subtype is predominantly (> 80%) comprised of markedly atypical cells incorporated with pleomorphic nuclei. Glandular articulations appear absent.
- Sarcomatoid subtype is preponderantly (> 80%) constituted of atypical, spindle shaped cells. Neoplasm may mimic a sarcoma.
- Rhabdoid subtype is an extremely exceptional sarcomatoid variant. Tumefaction is composed of enlarged, atypical cells pervaded with abundant eosinophilic cytoplasm and eccentric nuclei.
- Carcinosarcoma subtype demonstrates an admixture of spherical epithelioid cells and spindle shaped sarcomatous cells. Thus designated, carcinosarcoma is arbitrarily constituted of around 30% of a singular component as epithelioid cells and spindle shaped cells [2,3].

Figure 1: Undifferentiated carcinoma pancreas demonstrating an admixture of epithelioid cells and spindle shaped cells with significant atypia and cellular and nuclear pleomorphism surrounded by minimal stromal desmoplasia. An absence of glandular configurations is seen [6].

Figure 2: Undifferentiated carcinoma pancreas exhibiting an admixture of epithelioid cells and spindle shaped cells with significant atypia and cellular and nuclear pleomorphism with minimal circumscribing stromal desmoplasia and an absence of glandular articulations [7].

Undifferentiated carcinoma with osteoclast-like giant cells (UCOGC)	**Sarcomatoid carcinoma**	**Rhabdoid carcinoma**
Spindle shaped cells	Spindle shaped cells	Mimics rhabdomyosarcoma
Giant osteoclast- like cells	Pleomorphic cells	Monomorphic cells
Mononuclear cells	Mononuclear and multinuclear cells	Prominent nuclei
High mitotic index	Glandular formation	Cellular and nuclear pleomorphism may be absent.
	Mimics sarcoma	Rhabdoid inclusions
	Osteoclast-like giant cells are absent	Loss of SMARCAB1/ INI1

Table 1: Histological characteristics of undifferentiated carcinoma pancreas [2,3].

Undifferentiated carcinoma pancreas appears immune reactive to vimentin and keratin [4,5].

Neoplastic cells appear immune nonreactive to E-cadherin. Characteristically, around ~50% of undifferentiated rhabdoid carcinoma pancreas represent with loss of SMARCB1/INI1 within the nuclear region, as discerned with cogent immunohistochemistry.

Undifferentiated carcinoma pancreas requires segregation from neoplasms such as sarcoma, malignant melanoma or undifferentiated carcinoma pancreas with osteoclast-like giant cells [4,5].

Computerized tomography (CT) and magnetic resonance imaging (MRI) appear as a preferential imaging modality for appropriately discerning undifferentiated carcinoma pancreas. Commonly, a mass lesion demonstrating delayed enhancement is encountered [4,5].

Upon radiography, intra-tumour calcification may be encountered.

Surgical tissue sampling or surgical resection is optimal for cogent morphological diagnosis of tumefaction.

Surgical eradication of the neoplasm may be possible and appropriately adopted. Besides, chemotherapy with gemcitabine can be employed for alleviating the neoplasm [4,5].

Additionally, radiotherapy may be beneficially utilized. Certain PDL1+ tumours may benefit with administration of immunotherapy.

Prognostic outcomes of undifferentiated carcinoma pancreas are extremely adverse. An average survival of 5 months is encountered. Collation of significant prognostic factors may be challenging.

Absence of osteoclast-like giant cells is a significant feature for appropriate discernment of and ascertaining prognosis of undifferentiated carcinoma pancreas.

Prognostic outcomes of undifferentiated carcinoma pancreas are singularly inferior, in contrast to undifferentiated carcinoma with osteoclast-like giant cells [4,5].

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6. Image 1 Courtesy: Pathology outlines.

7. Image 2 Courtesy: Semantic scholar.