**ROLE OF SALL4 IMMUNOCYTOCHEMISTRY IN DIAGNOSING AND SUBTYPING OF HEPATOBLASTOMA ON FINE NEEDLE ASPIRATION CYTOLOGY**

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**Introduction**

- **Rare pediatric solid tumor:** ~1% of childhood cancers
- Liver biopsy theoretically increases the risk of needle track tumor seeding or dissemination and is rarely performed
- Fine needle aspiration cytology (FNAC) smears are often the **only material available** for evaluation prior to chemotherapy and surgery
- **Subtypes** of hepatoblastoma (HB) **differ in prognosis and response to chemotherapy.** Embryonal subtype shows a good response to chemotherapy with persistence of fetal cells. Embryonal subtype has a poor prognosis as compared to fetal subtype and small-cell undifferentiated subtype has the most aggressive course
- **SALL4:** A stem cell marker and oncogenic protein. Reactivation has been seen in liver cancers recently and expression found to predict a poor outcome

**Objectives**

- To **assess the utility of SALL4** in subtyping of hepatoblastoma on fine needle aspiration cytology in conjunction with cytological features and do histological correlation wherever available

**Methods**

- **Pretherapy FNAC smears** (Ultrasound guided and blind) obtained from 53 children diagnosed over a period of nine years from January 2009 to January 2018 were included
- Post-chemotherapy surgical resection specimens were available in **30 patients**
- **SALL4 immunostain** was done on 33 cases

**Results**

- **Age range:** 5 months to 7 years; 45 males and 8 females
- On cytology, all the cases were classified as epithelial HB and were further subclassified as pure fetal, pure embryonal and combined epithelial HB

**Embryonal type HB**

- Trabeculae and loose clusters (A) (PAP, 20x). acini (Inset) [MGG, 10x]. Cells with high N:C ratio, misonucleosis, coarse chromatin, nuclear moulding and multiple peripheral nucleoli (B) (PAP, 40x). Strong diffuse nuclear positivity of SALL4 (C) [ICC,20x]

**Fetal type HB**

- Trabeculae (A), Inset shows acini (PAP, 10x). Cells with abundant cytoplasm, fairly uniform nuclei and single central nucleolus (B) (PAP, 40x). Focal and weak nuclear positivity of SALL4 (C) [ICC, 20x]

**References**