PATIENT	REPORT DATE	BOOKING ID
Mr. Devraj Garg	13 Nov 2019	#011905060353

PMS2 Immunohistochemistry

Clinician

Clinician Name: Dr. Amish Vora
Medical Facility: Hope Clinic.
Pathologist: Not Provided

Test Description

Defects in the mismatch repair (MMR) pathway is one of the best defined molecular pathways involved in both inherited and sporadic cancer pathogenesis. Established methods to classify tumors as MMR-deficinet cancers include: 1) immunohistochemistry (IHC) to measure loss of MMR protein expression; and 2) microsatellite instability analysis to identify those with a microsatellite instability-high (MSI-H) phenotype.
Well established for: Hereditary Non-Polyposis Colorectal Cancer (HNPCC)-associated cancers (i.e., cancers of the colorectum, endometrium, stomach, ovaries, urinary tract, other gastrointestinal sites and brain). Loss of MMR protein expression may help to identify those with germline MMR gene mutations, which in turn may provide individuals with an opportunity for cancer prevention through colorectal, endometrial and ovarian cancer risk management options as outlined in the NCCN guidelines.

Specimen

Sample Type: FFPE block B/7618/2016
Site: Prostrate
Pathology ID: MOLQ/IHC-50112019
Disease: Adenocarcinoma (Acinar), Prostrate Gleason score: 8

Interpretation

Loss of expression or Presence of expression (nuclear staining).

Methodology

Immunostaining for PMS2 protein was done using PathnSitu Rabbit PMS2 monoclonal (Clone EP51) antibody (#PR067)

Note

MLH1 and PMS2 function as a stable heterodimer that, corrects small errors involving mispaired nucleotides which are introduced by DNA polymerase during DNA replication.

A functional defect in *MLH1* results in the degradation of both MLH1 and PMS2, whereas a defect in *PMS2* results only in the degradation of PMS2. The MLH1 protein joins with another protein called PMS2 (produced from the PMS2 gene), to form a protein complex. This complex coordinates the activities of other proteins that repair errors made during DNA replication. The repairs are made by removing a section of DNA that contains errors and replacing the section with a corrected DNA sequence. The PMS2 gene is a member of a set of genes known as the mismatch repair (MMR) genes.

References

1. Uncertainty in the Utility of Immunohistochemistry in Mismatch Repair Protein Expression in Epithelial Ovarian Cancer. D Copppola *et al.* Anticancer Res. 2012 Nov; 32(11).
2. Association Between IHC and MSI Testing to Identify Mismatch Repair–Deficient Patients with Ovarian Cancer. Ji-Hyun Lee *et al.* Genet Test Mol Biomarkers. 2014 Apr 1; 18(4).
3. Colorectal Carcinomas With Isolated Loss of PMS2 Staining by Immunohistochemistry Lindsay Alpert et al. Archives of Pathology & Laboratory Medicine 2018 142:4.

PMS2: Presence of Expression

Microscopy Evaluation

HE Staining (Figure 1)

PMS2 by IHC: (Figure 2)
Presence of Expression

PMS2 IHC - Tumor

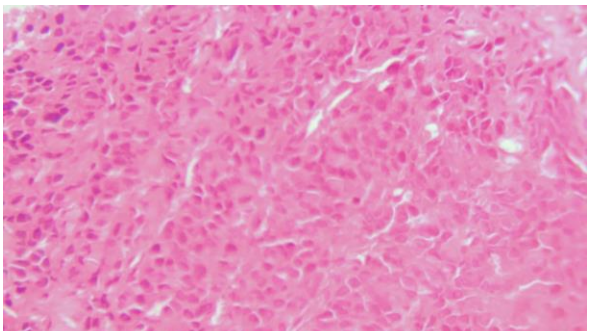

Figure 1

PMS2 IHC- Tumor Cells

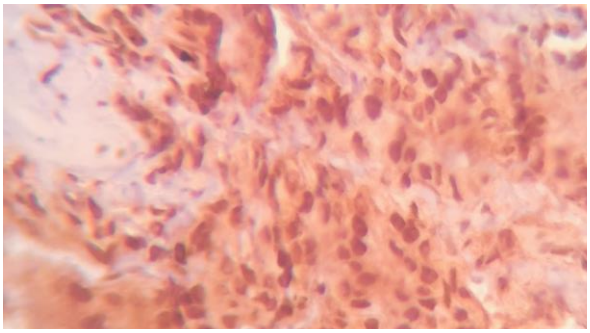

Figure 2

Reviewed By

Dr. Gulshan Yadav, MD
Head, Pathology

PMS2 IHC

4. Germline mutations in PMS2 and MLH1 in individuals with solitary loss of PMS2 expression in colorectal carcinomas from the Colon Cancer Family Registry Cohort Christophe Rosty et al. BMJ Open. 2016; 6(2): e010293