Down-Regulation of Fructose-1, 6-Bisphosphatase-1 (FBP1) in High Grade Urothelial Carcinoma (UC); as a New Diagnostic Marker to Differentiate Nested Variants of Urothelial Carcinoma from Benign Entities

Taliya Farooq  
*New York Medical College, taliya_farooq@nymc.edu*

Anas Mashlah  
*New York Medical College, anas_mashlah@nymc.edu*

Faisal Saeed  
*New York Medical College, faisal_saeed@nymc.edu*

Humayun Islam  
*New York Medical College, humayun_islam@nymc.edu*

Jonathan I. Epstein

*See next page for additional authors*

Follow this and additional works at: [https://touroscholar.touro.edu/nymc_fac_posters](https://touroscholar.touro.edu/nymc_fac_posters)

Part of the *Enzymes and Coenzymes Commons, and the Pathology Commons*

**Recommended Citation**


This Poster is brought to you for free and open access by the Faculty at Touro Scholar. It has been accepted for inclusion in NYMC Faculty Posters by an authorized administrator of Touro Scholar. For more information, please contact touro.scholar@touro.edu.
Authors
Taliya Farooq, Anas Mashlah, Faisal Saeed, Humayun Islam, Jonathan I. Epstein, and Minghao Zhong
Down-Regulation of Fructose-1, 6-Bisphosphatase-1 (FBP1) in High Grade Urothelial Carcinoma (UC) as a New Diagnostic Marker to Differentiate Nested Variants of Urothelial Carcinoma from Benign Entities.

1. Taliya Farooq MD 1, 2. Anas Mashlah M.D. 1, 3. Faisal Saeed MD 1, 4. Islam Humayun M.D/Ph.D. 1, 5. Jonathan I Epstein MD 2 and 6. Minghao Zhong M.D., Ph.D. 1

1. New York Medical College at Westchester Medical Center, Pathology, Valhalla, NY and 2. Johns Hopkins University, Pathology, Baltimore, MD.

BACKGROUND:

Nested variants of urothelial carcinoma are characterized by deceptively bland histomorphology and aggressive clinical behavior. Previously, TERT promoter mutation has been described as specific molecular finding for Nested Variants of Urothelial Carcinoma (NVUC). But to date, no good reliable IHC markers have been discovered to differentiate benign mimickers of NVUC including Von Brunn’s Nests (VBN) from NVUC. Recently, loss of FBP1 has been found to be associated with several high grade tumors and may be responsible for Warburg effect at molecular level (Nature, 513:251-5). Fructose-1, 6-bisphosphate is intermediate in glycolysis and its level is mainly controlled by upregulation of fructose-6-phosphate kinase and downregulation of FBP-1. Here, we would like to evaluate the potential role of FBP1 IHC stain to differentiate NVUC from benign entities.

DESIGN:

Tissue microarray slides (TMA) were constructed from 141 cases of UC, including 97 high grade (HG) and 44 low-grade (LG) cases. We also retrieved Nested (21) and Large Nested (5) variants of urothelial carcinoma from two institutes. The TMA slides and full section slides were subjected to IHC stain for FBP1 (Sigma, 1:100 dilutions). The morphology and FBP-1 staining intensity of urothelial component were carefully examined.

RESULTS:

1. Normal urothelium are strongly positive for FBP1.
2. Among 141 case of UC from TMA, 79% HG UC and 56% LG UC had decrease or loss of FBP1.
3. Decrease expression or loss of FBP-1 was noticed in 19/21 (90%) NVUC and 4/5 (80%) of LNVUC (non-neoplastic urothelium serves as an internal control).

CONCLUSIONS:

1) Loss of FBP1 is associated with UC and especially high grade UC.
2) Loss of FBP-1 can be used as a diagnostic marker to differentiate NVUC from other benign entities including VBN.
3) Down-regulation of FBP1 may be one of the mechanisms of urothelial carcinoma to gain cancer cell proliferation and tumourigenicity. It may be potential target for novel therapy.

REFERENCES:
