**Supplementary Table S2: Characteristics of the patients with mismatch repair-deficient UTUC tumors.**

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| --- | --- | --- | --- | --- | --- | --- |
| **Diagnosis** | **Clinical risk factors** | **Tumor mutational burden (/Mb)** | **MSIsensor score** | **MMR protein absence on IHC** | **Somatic mutations in MMR genes** | **Germline mutation in MMR genes** |
| Lynch syndrome | Yes | 49 | 41,29 | NA | *MSH2*: **G410Vfs\*2**  *MSH6*: R1076C | MSH2 |
| Lynch syndrome | Yes | 60 | 30,05 | NA | *MSH2*: **A54Pfs\*10**, P349R | MSH2 |
| Lynch syndrome | Yes | 49 | 26,55 | NA | *MSH2*: A636P, **H801Qfs\*9**  *MSH6*: R468C | MSH2 |
| Somatic Lynch-like UTUC (1) | No | 29 | 23,72 | MSH2, MSH6 | *MSH2*: **Q395\*** | No germline mutation |
| Lynch syndrome | Yes | 25 | 23,26 | MSH2, MSH6 | *MSH2*: **W764\*** | MSH2 |
| Lynch syndrome | Yes | 75 | 21,67 | MSH2, MSH6 | *MSH2*: D240V, **Q252\*** | MSH2 |
| Lynch syndrome | Yes | 26 | 17,98 | MLH1, PMS2 | *MLH1*: **X263\_splice** | MLH1 |
| Suspected Lynch syndrome (2) | Yes | 21 | 17,39 | MSH2, MSH6 | *MSH2*: **T754Lfs\*9** | NA (no consent) |
| Lynch syndrome | No | 60 | 16,06 | MSH2, MSH6 | *MSH2*: D603Y | MSH2 |
| Lynch syndrome | No | 64 | 13,88 | NA | *MSH2*: **C176Vfs\*38** | MSH2 |
| Lynch syndrome | Yes | 35 | 12,46 | MSH2, MSH6 |  | MSH2 |
| Lynch syndrome | Yes | 472 | 10,83 | NA | *MSH2*: R524C, E467A | MSH2 |
| Lynch syndrome (3) | Yes | 22 | 3,8 | MSH2, MSH6 |  | MSH2 |
| Lynch syndrome (4) | Yes | 343 | 1,14 | MSH6 | *MLH1*: L509I,L676F  *MSH2*: Q419H  *MSH6*: S614P, E810D, **P386Lfs\*25**, **Q1155\*** | MSH6 |

Numbers in brackets refer to patients from Figure 4.