Table S4. Reports of LS-related UTUC patients underwent germline MMR detection.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Author | Year of publication | Country | Data obtained from | Population | MSI detection | IHC detection | Mutation analysis | Frequency of LS-UTUC# (149 families) |
| Tetsuya et al.[1] | 2020 | Japan | Saitama Medical University | 164 UTUCs underwent RNU | BAT25, BAT26, D5S346, D2S123, D17S250 | MLH1, MSH2, MSH6, PMS2 | Sanger sequencing and/or MLPA | 3 cases (1.8%) |
| Donahue et al.[2] | 2019 | USA | Colon Cancer Family Registry  Memorial Sloan Kettering Cancer Center | Documented LS-associated germline mutations | Unknown | Unknown | Targeted Sequencing | 17 cases and 7 newly identified LS-UTUCs\*§ |
| Shinji et al.[3] | 2018 | Japan | Toranomon Hospital | 143 serial UTUCs underwent RNU | NA | MLH1, PMS2, MSH2, MSH6. | Sanger sequencing and/or MLPA | 2 cases (1.4%) |
| Metcalfe et al.[4] | 2018 | USA | The University of Texas MD Anderson Cancer Center | 115 consecutive UTUCs | BAT25, BAT26, BAT40, D2S123, D5S346, D17S250, TGFBR20 | MLH1, MSH2, MSH6, PMS2 | Unknown germline mutation detection method | 6 cases (5.2%) \*  And 6 known LS-UTUCs as a reference |
| Harper et al.[5] | 2016 | USA | Cleveland Clinic Lynch Syndrome Registry | 21 cases with a history of Lynch syndrome | NA | MLH1, MSH2, MSH6, PMS2 | Unknown | 3 cases |
| Joost et al.[6] | 2015 | Denmark, Sweden | Danish Hereditary Nonpolyposis Colorectal Cancer Registry | 55 families with LS-UTUC | BAT-25, BAT-26, NR-21, NR-24, and MONO-27 | MLH1, MSH2, MSH6 | Unknown | 84 cases from 53 families |
| Skeldon et al.[7] | 2013 | UK, USA, Canada, Netherland | Familial Gastrointestinal Cancer Registry | 321 persons with known MMR mutations | BAT25, BAT26, D2S123, D5S346, D17S250 | MLH1, MSH2, MSH6 | Sanger sequencing and/or MLPA for MLH1, MSH2, and MSH6 | 7 cases with UTUC and bladder cancer |
| Crockett et al.[8] | 2011 | Sweden | Hereditary Cancer Center in Omaha | 39 UTUCs who met Amsterdam Criteria II or had germline mutations | Unknown | Unknown | Unknown | 33 cases\*§ |
| Postet al.[9] | 2010 | Netherlands | Radboud University Nijmegen Medical Centre | Carriers and first degree relatives of 95 families with a germline mutation | D2S123, D5S346, D17S250, BAT25, BAT26, BAT40 | MLH1, MSH2, MSH6 | Unknown | 9 cases from 95 families |
| ROUPRÊT et al.[10] | 2005 | France | Tenon Hospital  Pitiè-Salpètrière Hospital | 164 sporadic UTUCs | BAT25, BAT26, D2S123, D5S346, D17S250 | NA | Sanger sequencing for MSH2 | 3 cases (1.8%) |

UTUC: upper tract urothelial carcinoma

LS-UTUC: lynch syndrome related upper tract urothelial carcinoma

MLPA: multiplex ligation-dependent probe amplification

MSI: microsatellite instability

NA: not applicable

# Confirmed LS-UTUC by germline mutation analysis

\* Specific mutation sites information unavailable

§ Clinicopathological information of each LS-UTUC patient unobtainable

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