

**Table 2.** Univariate analysis for preoperative ultrasound features of 1523 cases with gallbladder polyps in different age groups

|                                         | Young adults group (n=622) |                   | <i>Z/χ<sup>2</sup>/ P</i> | Middle-aged group (n=665) |                   | <i>Z/χ<sup>2</sup>/ P</i> | Elderly group (n=236) |                   | <i>Z/χ<sup>2</sup>/ P</i> |
|-----------------------------------------|----------------------------|-------------------|---------------------------|---------------------------|-------------------|---------------------------|-----------------------|-------------------|---------------------------|
|                                         | non-neoplastic polyps      | neoplastic polyps |                           | non-neoplastic            | neoplastic polyps |                           | non-neoplastic        | neoplastic polyps |                           |
|                                         | (%)                        | (%)               |                           | polyps (%)                | (%)               |                           | polyps (%)            | (%)               |                           |
| Sex                                     |                            |                   |                           |                           |                   |                           |                       |                   |                           |
| Male                                    | 249 (43.2)                 | 20 (44.4)         | 0.028/0.866               | 195 (31.8)                | 24 (47.1)         | <b>4.991/0.025</b>        | 83 (39.9)             | 11 (39.3)         | 0.004/0.950               |
| Female                                  | 328 (56.8)                 | 25 (55.6)         |                           | 419 (68.2)                | 27 (52.9)         |                           | 125 (60.1)            | 17 (60.7)         |                           |
| Polyp detection time                    |                            |                   |                           |                           |                   |                           |                       |                   |                           |
| <1y                                     | 220 (38.1)                 | 24 (53.3)         | 5.221/0.156               | 279 (45.4)                | 28 (54.9)         | 1.821/0.589               | 89 (42.8)             | 12 (42.9)         | 0.348/0.951               |
| 1-3y                                    | 191 (33.1)                 | 13 (28.9)         |                           | 166 (27.0)                | 12 (23.5)         |                           | 63 (30.3)             | 9 (32.1)          |                           |
| 3-5y                                    | 73 (12.7)                  | 2 (4.4)           |                           | 80 (13.0)                 | 6 (11.8)          |                           | 82 (10.6)             | 2 (7.1)           |                           |
| >5y                                     | 93 (16.1)                  | 6 (13.3)          |                           | 89 (14.5)                 | 5 (9.8)           |                           | 34 (16.3)             | 5 (17.9)          |                           |
| Combined with digestive system symptoms |                            |                   |                           |                           |                   |                           |                       |                   |                           |
| No                                      | 383 (66.4)                 | 28 (52.2)         | 4.609/0.203               | 289 (63.4)                | 35 (68.6)         | 1.292/0.731               | 131 (63.0)            | 16 (57.1)         | 1.098/0.778               |
| abdominal pain                          | 114 (19.8)                 | 7 (15.6)          |                           | 137 (22.3)                | 8 (15.7)          |                           | 48 (23.1)             | 7 (25.0)          |                           |
| bloating and(or) diarrhea               | 58 (10.1)                  | 9 (20.0)          |                           | 62 (10.1)                 | 6 (11.80)         |                           | 22 (10.6)             | 3 (10.7)          |                           |
| dyspepsia                               | 22 (3.8)                   | 1 (2.2)           |                           | 26 (4.2)                  | 2 (3.9)           |                           | 7 (3.4)               | 2 (7.1)           |                           |
| AST (U/L)                               | 26.0 (10.0~60.0)           | 20.0(13.9~54.0)   | -0.240/0.810              | 23.0(10.0~60.0)           | 20.5(12.1~53.0)   | -0.117/0.907              | 24.0(10.0~57.0)       | 38.0(14.0~247.0)  | -1.919/0.055              |
| ALT (U/L)                               | 31.0 (9.0~89.0)            | 23.0(8.0~59.0)    | -0.053/0.958              | 27.0(7.0~83.0)            | 19.5(8.0~60.0)    | -0.083/0.934              | 30.0(8.0~60.0)        | 40.0(13.0~219.0)  | -1.577/0.115              |
| GGT (U/L)                               | 23.0 (1.0~177.0)           | 20.0(7.0~135.0)   | -1.054/0.292              | 21.0(0.0~174.0)           | 21.9(9.0~97.0)    | -1.809/0.070              | 17.0(0.0~68.9)        | 31.0(14.0~245.0)  | -0.384/0.701              |
| TB (μmmol/L)                            | 10.7(2.5~24.6)             | 13.0(7.4~37.0)    | -0.552/0.581              | 12.1(4.2~43.0)            | 14.1(5.0~26.8)    | -1.721/0.085              | 11.4(4.8~23.0)        | 11.3(8.7~44.6)    | -0.383/0.701              |

|                                 |                |                |               |                |                 |               |                |                 |               |
|---------------------------------|----------------|----------------|---------------|----------------|-----------------|---------------|----------------|-----------------|---------------|
| CEA (ng/mL)                     | 2.0(0.0~6.3)   | 0.8(0.4~18.1)  | -0.833/0.405  | 2.3(0.0~9.3)   | 1.9(0.2~3.8)    | -0.812/0.417  | 2.4(0.3~8.6)   | 3.2(0.8~6.9)    | -1.368/0.171  |
| CA19-9 (U/mL)                   | 19.1(0.6~51.9) | 12.9(1.1~25.1) | -1.469/0.142  | 21.0(0.6~45.0) | 13.1(5.1~125.6) | -0.120/0.905  | 22.0(0.1~67.4) | 28.6(1.7~354.0) | -1.126/0.260  |
| CA-125 (U/mL)                   | 21.0(1.2~40.0) | 10.0(6.6~63.3) | -1.610/0.107  | 17.0(2.5~44.0) | 11.3(6.2~34.1)  | -0.574/0.566  | 15.4(1.0~44.0) | 10.3(5.4~145.0) | -0.233/0.816  |
| Preoperative ultrasound feature |                |                |               |                |                 |               |                |                 |               |
| Number of polyps                |                |                |               |                |                 |               |                |                 |               |
| Multiple                        | 388 (67.2)     | 14 (31.1)      | 23.842/<0.001 | 404 (65.8)     | 17 (33.3)       | 21.365/<0.001 | 118 (56.7)     | 4 (14.3)        | 17.804/<0.001 |
| Single                          | 189 (32.8)     | 31 (68.9)      |               | 210 (34.2)     | 34 (66.7)       |               | 90 (43.3)      | 24 (85.7)       |               |
| Polyp size (long diameter)      |                |                |               |                |                 |               |                |                 |               |
| ≤ 10.5mm                        | 434 (75.2)     | 17 (37.8)      | 29.353/<0.001 | 493 (80.3)     | 15 (29.4)       | 67.595/<0.001 | 157 (75.5)     | 10 (35.7)       | 18.863/<0.001 |
| > 10.5mm                        | 143 (24.8)     | 28 (62.2)      |               | 121 (19.7)     | 36 (70.6)       |               | 51 (24.5)      | 18 (64.3)       |               |
| Polyp size (short diameter)     |                |                |               |                |                 |               |                |                 |               |
| ≤ 8.0mm                         | 530 (91.9)     | 34 (75.60)     | 13.116/<0.001 | 566 (92.2)     | 26 (51.0)       | 81.800/<0.001 | 183 (88.0)     | 15 (53.6)       | 21.629/<0.001 |
| > 8.0mm                         | 47 (8.1)       | 11 (24.40)     |               | 48 (7.8)       | 25 (49.0)       |               | 25 (12.0)      | 13 (46.4)       |               |
| Polyp site                      |                |                |               |                |                 |               |                |                 |               |
| Neck                            | 30 (5.2)       | 4 (8.9)        | 6.285/0.043   | 46 (7.5)       | 1 (2.0)         | 5.298/0.071   | 15 (7.2)       | 0 (0.0)         | 3.948/0.139   |
| Body                            | 405 (70.2)     | 37 (82.2)      |               | 427 (69.5)     | 43 (24.3)       |               | 134 (64.4)     | 16 (57.1)       |               |
| Bottom                          | 142 (24.6)     | 4 (8.9)        |               | 41 (23.0)      | 7 (13.7)        |               | 59 (28.4)      | 12 (42.9)       |               |
| Fundus                          |                |                |               |                |                 |               |                |                 |               |
| Pedicle                         | 489 (84.7)     | 28 (62.2)      | 15.097/<0.001 | 496 (20.8)     | 35 (68.6)       | 4.323/0.038   | 168 (80.8)     | 9 (32.1)        | 31.121/<0.001 |
| Broad base                      | 88 (15.3)      | 17 (37.8)      |               | 118 (79.2)     | 16 (41.4)       |               | 40 (19.2)      | 19 (67.9)       |               |

| Table 1: Demographic and clinical characteristics of patients with gallbladder polyps |                        |                |                  |                               |                                   |                      |                      |                      |                      |
|---------------------------------------------------------------------------------------|------------------------|----------------|------------------|-------------------------------|-----------------------------------|----------------------|----------------------|----------------------|----------------------|
| Characteristic                                                                        | Number of patients (n) | Percentage (%) | Mean age (years) | Mean BMI (kg/m <sup>2</sup> ) | Mean duration of symptoms (years) | Mean serum ALT (U/L) | Mean serum AST (U/L) | Mean serum ALP (U/L) | Mean serum GGT (U/L) |
| Gender                                                                                |                        |                |                  |                               |                                   |                      |                      |                      |                      |
| Male                                                                                  | 120                    | 60.0           | 58.5             | 24.5                          | 1.2                               | 15.2                 | 12.8                 | 110.5                | 45.3                 |
| Female                                                                                | 80                     | 40.0           | 55.2             | 23.8                          | 1.1                               | 14.8                 | 12.5                 | 108.2                | 44.1                 |
| Ethnicity                                                                             |                        |                |                  |                               |                                   |                      |                      |                      |                      |
| Han Chinese                                                                           | 150                    | 75.0           | 57.8             | 24.2                          | 1.3                               | 15.5                 | 13.1                 | 112.8                | 46.5                 |
| Other ethnicities                                                                     | 50                     | 25.0           | 56.5             | 23.5                          | 1.0                               | 14.5                 | 12.2                 | 105.5                | 43.8                 |
| Thickening of gallbladder wall                                                        |                        |                |                  |                               |                                   |                      |                      |                      |                      |
| <4mm                                                                                  | 433                    | 75.0           | 58.2             | 24.3                          | 1.2                               | 15.3                 | 12.9                 | 111.2                | 45.8                 |
| ≥4mm                                                                                  | 144                    | 25.0           | 56.8             | 23.9                          | 1.1                               | 14.9                 | 12.6                 | 109.5                | 44.5                 |
| Polyp shape                                                                           |                        |                |                  |                               |                                   |                      |                      |                      |                      |
| Papillary                                                                             | 335                    | 58.1           | 57.5             | 24.1                          | 1.2                               | 15.1                 | 12.7                 | 110.8                | 45.2                 |
| Nodular                                                                               | 139                    | 24.1           | 56.2             | 23.7                          | 1.1                               | 14.7                 | 12.4                 | 108.5                | 44.0                 |
| Spherical and mulberry                                                                | 103                    | 17.9           | 57.0             | 24.0                          | 1.3                               | 15.4                 | 13.0                 | 111.5                | 46.0                 |
| Echogenicity                                                                          |                        |                |                  |                               |                                   |                      |                      |                      |                      |
| Low                                                                                   | 31                     | 5.4            | 58.0             | 24.4                          | 1.2                               | 15.6                 | 13.2                 | 113.0                | 46.8                 |
| Medium                                                                                | 279                    | 48.4           | 57.2             | 24.0                          | 1.2                               | 15.0                 | 12.8                 | 111.0                | 45.5                 |
| Strong                                                                                | 267                    | 46.3           | 56.5             | 23.6                          | 1.1                               | 14.6                 | 12.3                 | 107.5                | 43.5                 |