SUPPLEMENTARY TABLES

Supplementary Table 1. Correlations analysis between OSM-related immune infiltrating cells monocyte, dendritic cell, Tfh cell and four immune regulatory checkpoints CTLA4, HAVCR2, LAG3, PDL1 by TIMER.

| Cell type   | Gene marker | CTLA4 Cor | | CTLA4 P | HAVCR2 Cor | | HAVCR2 P | LAG3 Cor | | LAG3 P | PDL1 Cor | | PDL1 P |
|-------------|-------------|-----------|------|---------|-----------|------|---------|-----------|---------|---------|-----------|------|
| Monocyte    | CD86        | 0.650     | *    | 0.794   | *         | 0.466 | *       | 0.456     | *       |
|             | CD115(CSF1R)| 0.184     | 0.291| 0.606   | *         | 0.033 | 0.853   | 0.315     | 0.065   |
| Dendritic cell | HLA-DPB1  | 0.658     | *    | 0.549   | *         | 0.484 | *       | 0.368     | *       |
|             | HLA-DOB     | 0.610     | *    | 0.320   | 0.0613    | 0.490 | *       | 0.413     | *       |
|             | HLA-DRA     | 0.647     | *    | 0.581   | *         | 0.534 | *       | 0.389     | *       |
|             | HLA-DPA1    | 0.663     | *    | 0.641   | *         | 0.556 | *       | 0.393     | *       |
|             | BDCA-1(CD1C)| 0.543     | *    | 0.427   | *         | 0.180 | 0.30    | 0.224     | 0.196   |
|             | BDCA-4(NRP1)| 0.188     | 0.279| 0.402   | -         | -0.028| 0.873   | 0.413     | *       |
|             | CD11C(ITGAX)| 0.383     | *    | 0.770   | *         | 0.193 | 0.266   | 0.275     | 0.110   |
| Tfh cell    | BCL6        | 0.358     | *    | 0.195   | 0.262     | 0.089 | 0.611   | 0.585     | *       |
|             | IL21        | 0.285     | 0.097| 0.139   | 0.427     | 0.173 | 0.321   | 0.230     | 0.183   |

Supplementary Table 2. Summary of clinic parameters of CCA patients collected for RNA-seq and western-blotting.

| Sample number | Age years | Gender | Grade       | CA125 U/mL | CA199 U/mL | CEA ug/L | AFP ug/L | Size cm |
|---------------|-----------|--------|-------------|------------|------------|----------|----------|---------|
| 1             | 74        | male   | moderate    | 36.40      | 47.35      | 5.40     | 3.90     | 2       |
| 2             | 59        | female | moderate    | 8          | 20.29      | 0.58     | 1.23     | 2       |
| 3             | 62        | male   | moderate-low| 479        | >12000     | 422.43   | 1.56     | 8       |
| 4             | 59        | male   | moderate    | 16.4       | 241.08     | 7.82     | 2.21     | 4.5     |
| 5             | 61        | male   | moderate    | 58.4       | 2281.71    | 12.41    | 2.85     | 6       |
| 6             | 36        | male   | moderate    | 8.70       | 10.67      | 3.17     | 12.04    | 5       |
| 7             | 51        | female | moderate-low| 37.20      | <2.00      | 2.21     | 2.14     | 8.5     |
| 8             | 53        | female | moderate    | 40.90      | 1080.58    | 2.53     | 1.84     | 2.5     |
| 9             | 65        | male   | moderate    | 26.10      | >12000     | 9.80     | 5.08     | 5.5     |
| 10            | 49        | male   | moderate-low| 2490.60    | >12000     | 34.92    | 3.25     | 5.5     |
| 11            | 52        | female | moderate-low| 26.60      | 3262.91    | 2.17     | 2.83     | 4.5     |
| 12            | 38        | male   | moderate    | -          | 1174.2     | -        | -        | 5       |
| 13            | 58        | female | moderate    | 5          | 6.53       | 1.09     | 3.21     | 6       |
| 14            | 48        | male   | moderate    | 10.60      | 800.71     | 528.70   | 2.66     | 3       |
| 15            | 82        | male   | moderate-high| 62.80      | 118.14     | 4.15     | 18.01    | 5       |
| 16            | 53        | male   | moderate    | 2.9        | <2.00      | 3.20     | 4.03     | 4       |
| 17            | 65        | male   | moderate    | 11.50      | <2.00      | 1.79     | 1.51     | 5       |