**Supplementary Table 1: Baseline characteristics of patients with SA-BSI.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Characteristics** | **Total (*n* = 349)** | **Survivors (*n* = 288)** | **Nonsurvivors (*n* = 61)** | ***Z/χ*2** | ***P*-value** |
| Age (years), median (IQR) | 59.0 (45.5,68.0) | 58.0 (44.0,66.0) | 65.0 (48.0,75.0) | −2.787\* | 0.005 |
| Male | 243 (69.6) | 196 (68.1) | 47 (77.0) | 1.925† | 0.165 |
| Co-morbidities |  |  |  |  |  |
| Trauma | 73 (20.9) | 64 (22.2) | 9 (14.8) | 1.697† | 0.193 |
| Diabetes mellitus | 70 (20.1) | 57 (19.8) | 13 (21.3) | 0.073† | 0.788 |
| Solid tumor | 57 (16.3) | 45 (15.6) | 12 (19.7) | 0.603† | 0.437 |
| Burn injury | 45 (12.9) | 42 (14.6) | 3 (4.9) | 3.371† | 0.066 |
| Cerebrovascular accident | 39 (11.2) | 29 (10.1) | 10 (16.4) | 2.028† | 0.154 |
| Chronic kidney disease | 31 (8.9) | 28 (9.7) | 3 (4.9) | 1.435† | 0.231 |
| Chronic cardiac insufficiency | 25 (7.2) | 18 (6.3) | 7 (11.5) | 2.067† | 0.151 |
| Chronic liver disease | 16 (4.6) | 11 (3.8) | 5 (8.2) | 2.205† | 0.138 |
| COPD or severe asthma | 7 (2) | 3 (1.0) | 4 (6.6) | 7.792† | 0.005 |
| APACHE II score, median (IQR) | 12 (9,17) | 11 (8,14) | 24 (21,29) | −11.360\* | <0.001 |
| SOFA score, median (IQR) | 4 (2,6) | 3 (2,5) | 12 (9,15.5) | −11.510\* | <0.001 |
| Hospitalization ward |  |  |  |  |  |
| ICU stay | 131 (37.5) | 79 (27.4) | 52 (85.2) | 71.764† | <0.001 |
| Clinical information within 48 h before blood sampling |  |  |  |  |  |
| Surgical procedure | 124 (35.5) | 106 (36.8) | 18 (29.5) | 1.170† | 0.279 |
| CVC in place | 167 (47.9) | 122 (42.4) | 45 (73.8) | 19.901† | <0.001 |
| Mechanical ventilation | 149 (42.7) | 99 (34.4) | 50 (82.0) | 46.602† | <0.001 |
| Polymicrobial SA-BSI | 54 (15.5) | 38 (13.2) | 16 (26.2) | 6.540† | 0.011 |
| Nosocomial infection | 266 (76.2) | 218 (75.7) | 48 (78.7) | 0.249† | 0.618 |
| Neutropenia | 7 (2.0) | 5 (1.7) | 2 (3.3) | 0.609† | 0.435 |
| MRSA | 215 (61.6) | 165 (57.3) | 50 (82.0) | 12.958† | <0.001 |
| Septic shock | 35 (10) | 4 (1.4) | 31 (50.8) | 136.315† | <0.001 |

Data were presented as *n* (%) or median (IQR). APACHE: Acute Physiology and Chronic Health Evaluation; COPD: Chronic obstructive pulmonary disorder; CVC: Central venous catheter; ICU: Intensive care unit; IQR: Interquartile range; MRSA: Methicillin-resistant *Staphylococcus aureus*; SA-BSI: *Staphylococcus aureus* bloodstream infection; SOFA: Sequential Organ Failure Assessment. \*Mann–Whitney *U*-test. †Chi‑squared test.

**Supplementary Table 2: Comparison of biological indicators of patients with SA-BSIs.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Biological indicators | Total (*n* = 349) | Survivors (*n* = 288) | Nonsurvivors (*n* = 61) | *t/Z* | *P*-value |
| Blood routine test |  |  |  |  |  |
| WBC (× 109/L) (IQR) | 10.1 (6.8,14.35) | 9.85 (6.8,14.2) | 11.4 (7.2,16.7) | −1.157\* | 0.247 |
| Hematocrit (%) (IQR) | 28.9 (24.05,33.5) | 29.1 (24.5,34.0) | 26.8 (22.75,30.55) | −2.612\* | 0.009 |
| Platelet (× 109/L) (IQR) | 171 (102.5,247.5) | 187 (121,262.75) | 85 (38,163.5) | −6.519\* | <0.001 |
| ANC (IQR) | 8.15 (5.56,12.74) | 7.79 (5.44,12.19) | 10.85 (7.04,16.40) | −2.649\* | 0.008 |
| Liver and kidney function |  |  |  |  |  |
| Albumin (g/L) (mean ± S.D.) | 29.56 ± 5.66 | 29.95 ± 5.52 | 27.73 ± 6.01 | −2.802† | 0.005 |
| GPT (U/L) (IQR) | 31 (17,57) | 30 (17,54) | 38.5 (21.25,77.5) | −2.482\* | 0.013 |
| GOT (U/L) (IQR) | 30 (21,50) | 28 (20,43.75) | 39 (28,107.5) | −4.474\* | <0.001 |
| ALP (U/L) (IQR) | 101 (74,151) | 98 (72,145.5) | 119.5 (88,165) | −2.413\* | 0.016 |
| γ-GT (U/L) (IQR) | 45 (26.0,95) | 42 (24.0,77.0) | 82.5 (33,173.75) | −3.570\* | <0.001 |
| LDH (U/L) (IQR) | 254 (197,342) | 244.5 (195.25,317.75) | 369 (252.5,649.5) | −4.830\* | <0.001 |
| TBil (μmol/L) (IQR) | 12.8 (9,20.35) | 11.8 (8.43,17.65) | 22.45 (14.63,47) | −7.038\* | <0.001 |
| SCr (μmol/L) (IQR) | 59 (44.5,95.5) | 57 (44,79.75) | 87 (50.75,167) | −3.620\* | <0.001 |
| PCT (ng/ml) (IQR) | 0.46 (0.18,1.31) | 0.39 (0.16,1.02) | 2.24 (0.47,13.47) | −5.779\* | <0.001 |

\*Mann–Whitney *U*-test. †Students *t*-test. γ-GT: Gamma glutamyl transpeptidase; ALP: Alkaline phosphatase; ANC: Absolute neutrophil count; GOT: Glutamic-oxaloacetic transaminase; GPT: Glutamic-pyruvic transaminase; IQR: Interquartile range; LDH: Lactic dehydrogenase; PCT: Procalcitonin; S.D.: Standard deviation; SCr: Serum creatinine; TBil: Total bilirubin; WBC: White blood count.

**Supplementary Table 3:** ***In vitro* antibiotic susceptibility of** ***Staphylococcus aureus* between survivors and nonsurvivors.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Total (*n* = 349)** | **Survivors (*n* = 288)** | **Nonsurvivors (*n* = 61)** | ***χ2*** | ***P*-value** |
| Antibiotic resistance\* |  |  |  |  |  |
| Cefoxitin (110 *vs.* 30)† | 114 (81.4) | 87 (79.1) | 27 (90.0) | 1.855 | 0.173 |
| Ciprofloxacin (232 *vs.* 47)† | 132 (47.3) | 98 (42.2) | 34 (72.3) | 14.204 | <0.001 |
| Clindamycin (288 *vs.* 61)† | 127 (36.4) | 103 (35.8) | 24 (39.3) | 0.279 | 0.598 |
| Erythromycin (288 *vs.* 61)† | 203 (58.2) | 164 (56.9) | 39 (63.9) | 1.011 | 0.315 |
| Gentamicin (288 *vs.* 61)† | 58 (16.6) | 47 (16.3) | 11 (18.0) | 0.107 | 0.744 |
| Levofloxacin (254 *vs.* 56)† | 161 (51.9) | 118 (46.5) | 43 (76.8) | 16.908 | <0.001 |
| Linezolid (287 *vs.* 60)† | 46 (13.3) | 38 (13.2) | 8 (13.3) | 0.000 | 0.985 |
| Moxifloxacin (281 *vs.* 57)† | 158 (46.7) | 123 (43.8) | 35 (61.4) | 5.917 | 0.015 |
| Nitrofurantoin (250 *vs.* 55)† | 1 (0.3) | 1 (0.4) | 0 (0) | 0.000 | >0.99 |
| Oxacillin (288 *vs.* 61)† | 236 (67.6) | 192 (66.7) | 44 (72.1) | 0.687 | 0.407 |
| Penicillin (288 *vs.* 61)† | 333 (95.4) | 273 (94.8) | 60 (98.4) | 1.466 | 0.226 |
| Quinupristin/dalfopristin (288 *vs.* 61)† | 44 (12.6) | 35 (12.2) | 9 (14.8) | 0.309 | 0.578 |
| Rifampin (236 *vs.* 49)† | 9 (3.2) | 6 (2.5) | 3 (6.1) | 1.701 | 0.192 |
| Tetracycline (231 *vs.* 49)† | 148 (52.9) | 118 (51.1) | 30 (61.2) | 1.669 | 0.196 |
| Vancomycin (278 *vs.* 58)† | 48 (14.3) | 38 (13.7) | 10 (17.2) | 0.500 | 0.479 |

Data were presented as *n* (%). \*Not all agents listed tested in all isolates. †The numbers in parentheses represent the total numbers of *Staphylococcus aureus* isolates performed susceptibility test.

**Supplementary Table 4: The source of SA-BSI, antibiotic therapy of the nonsurvivors compared with the survivors.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Total (*n* = 349)** | **Survivors (*n* = 288)** | **Nonsurvivors (*n* = 61)** | ***χ*2**\* | ***P*-value** |
| Primary site of infection |  |  |  |  |  |
| Pneumonia | 93 (26.6) | 70 (24.3) | 23 (37.7) | 4.624 | 0.032 |
| Skin and soft tissue infection | 85 (24.4) | 76 (26.4) | 9 (14.8) | 3.699 | 0.054 |
| Central venous catheter | 65 (18.6) | 59 (20.5) | 6 (9.8) | 3.767 | 0.052 |
| Intra-abdominal | 42 (12) | 25 (8.7) | 17 (27.9) | 17.508 | <0.001 |
| Primary BSI | 28 (7.7) | 26 (9.0) | 2 (3.3) | 2.255 | 0.133 |
| Bone and joint | 14 (4.0) | 13 (4.5) | 1 (1.6) | 1.080 | 0.299 |
| Endocarditis | 11 (3.2) | 9 (3.1) | 2 (3.3) | 0.004 | 0.950 |
| Urinary tract infection | 9 (2.6) | 8 (2.8) | 1 (1.6) | 0.260 | 0.610 |
| Others† | 2 (0.6) | 2 (0.7) | 0 (0) | 0.000 | >0.999 |
| Treatment |  |  |  |  |  |
| Source control |  |  |  |  |  |
| Removal of contaminated sutures | 64 (98.5) | 60 (98.4) | 4 (100) | 0.067 | 0.796 |
| Drainage of infected foci | 35 (10) | 25 (8.7) | 10 (16.4) | 3.319 | 0.068 |
| Types of antibiotics used before onset of SA-BSI |  |  |  |  |  |
| BL/BLI | 125 (35.8) | 103 (35.8) | 22 (36.1) | 0.002 | 0.964 |
| BL | 178 (51.0) | 145 (50.3) | 33 (54.1) | 0.283 | 0.594 |
| Fluoroquinolone | 24 (6.9) | 21 (7.3) | 3 (4.9) | 0.443 | 0.506 |
| Glycopeptides | 11 (3.2) | 10 (3.5) | 1 (1.6) | 0.554 | 0.457 |
| Others‡ | 11 (3.2) | 9 (3.1) | 2 (3.3) | 0.004 | 0.950 |
| Targeted treatment |  |  |  |  |  |
| Glycopeptides | 189 (54.2) | 151 (52.4) | 38 (62.3) | 1.973 | 0.160 |
| Piperacillin/tazobactam | 25 (7.2) | 23 (8.0) | 2 (3.3) | 1.677 | 0.195 |
| Linezolid | 58 (16.6) | 51 (17.7) | 7 (11.5) | 1.411 | 0.235 |
| Tigecycline | 26 (7.4) | 19 (6.6) | 7 (11.5) | 1.737 | 0.187 |
| Fluoroquinolone | 43 (12.3) | 37 (12.8) | 6 (9.8) | 0.422 | 0.516 |
| Delayed antibiotic therapy | 29 (8.3) | 25 (8.7) | 4 (6.6) | 0.298 | 0.585 |

Data were presented as *n* (%). BL: Beta-lactam antibiotics; BL/BLI: Beta-lactam/beta-lactamase inhibitors; BSI: Bloodstream infection; SA-BSI: *Staphylococcus aureus* bloodstream infection. \*Chi‑squared test. †Oromaxillo-facial region and prosthetic device. ‡Oxazolones, aminoglycosides.