

INTISARI

GAMBARAN *STREPTOCOCCAL TOXIC SHOCK SYNDROME* MENCIT (*Mus musculus*) YANG DIINFEKSI *Streptococcus suis* ISOLAT ASAL PAPUA INDONESIA

Adam Darsono
11/316257/KH/07151

Streptococcus suis merupakan agen penyebab infeksi pada babi yang bersifat zoonosis. Hingga tahun 2013 terjadi 4.711 kasus pada babi dan 1.642 kasus pada manusia akibat infeksi *S. suis* terutama di Indochina. Penelitian ini bertujuan mengetahui potensi isolat *S. suis* asal Papua dalam menyebabkan *septic shock* atau *Streptococcal toxic Shock syndrome* melalui observasi *in vivo* pada hewan model mencit yang diinfeksi *S. suis*.

Sebanyak 18 ekor Mencit (*Mus musculus*) betina *strain* Balb/c berusia enam minggu dengan berat badan antara 35-50 gram diaklimatisasi 3 hari di *Practical Animal Laboratory* FKH UGM dengan kondisi siklus 12 jam terang dan 12 jam gelap dengan makan dan minum *ad libitum*. Mencit dibagi menjadi 6 kelompok dengan 3 ekor mencit per kelompok. Kelompok I merupakan kelompok mencit kontrol (tanpa diinfeksi *S. suis*). Kelompok II hingga VI merupakan kelompok mencit yang diinfeksi *S. suis* dengan berturut-turut berasal dari *strain* Jerman (735), babi asal Papua (J123L dan J110) dan manusia asal Papua (H076 dan H086) dengan konsentrasi 10^8 CFU/mL secara intraperitoneal. Kejadian *septic shock* pada mencit diamati berdasarkan gejala klinis dan kematian antara 24-48 jam pasca diinfeksi *S. suis*. Kematian mencit selama 24-48 jam pasca infeksi *S. suis* dinekropsi, kemudian diambil organ hati dan ginjalnya untuk diproses preparat histopatologi dengan pewarnaan Hematoksilin dan Eosin (HE).

Hasil penelitian memperlihatkan bahwa gejala klinis mencit pasca infeksi *S. suis* secara umum menunjukkan depresi, lemas, rambut kusam, mata bengkak berair, ascites, eritema, tremor dan *tachypnea*. Kematian mencit yang diinfeksi *S. suis* berbagai *strain* pada 24 jam sebesar 26,67% dan 48 jam sebesar 20% dengan persentase kematian paling tinggi pada 24 jam (66,66%) akibat infeksi *S. suis strain* J123L. Gambaran histopatologis hati mencit terlihat perivaskulitis, sinusoid tidak radier, degenerasi melemak dan nekrosis. Mencit pasca diinfeksi *S. suis* isolat babi (J123L) maupun manusia (H076 dan H086) *strain* asal Papua menyebabkan kerusakan hati paling berat. Gambaran histopatologis ginjal mencit mengalami nefrosis, kongesti dan infiltrasi sel radang di interstisial tubulus renalis, hemoragi, degenerasi hidropik dan nekrosis epitel tubulus renalis. Mencit pasca diinfeksi *S. suis strain* asal babi dari Papua (J123L) dan Jerman (735) menyebabkan kerusakan ginjal paling berat. Secara umum dapat disimpulkan bahwa gejala *toxic shock* dan kematian mencit yang terjadi antara 24-48 jam memperlihatkan gambaran *Streptococcal Toxic Shock Syndrome*.

Kata kunci: *Streptococcus suis*, zoonosis, Papua, manusia, mencit, hati, dan ginjal

ABSTRACT

FEATURE OF *STREPTOCOCCAL TOXIC SHOCK SYNDROME* IN MICE (*Mus musculus*) INDUCED BY *Streptococcus suis* ISOLATES FROM PAPUA INDONESIA

Adam Darsono
11/316257/KH/07151

Streptococcus suis is a causative agent causing zoonotic disease in pigs. Until 2013, a total of 4.711 swine cases and 1.642 human cases have been reported, mainly from Indochina. This study aimed to determine the potential of *S. suis* isolates from Papua causing septic shock or streptococcal toxic shock syndrome in mice models infected with *S. suis*.

A total of 18 mice (*Mus musculus*) female strain Balb/c six weeks old with body weight about 35-50 gram were acclimatized for 3 days in Animal Practical Laboratory Faculty of Veterinary Medicine Gadjah Mada University, with a cycle of 12 hours under light and 12 hours in dark condition, ad libitum of feed and water. The total number of mice were divided into 6 groups with 3 mice per group. The group I was a control mice group (without induced *S. suis*). The group II to VI, the mice were infected with *S. suis* isolated from Germany (735), pig from Papua (J123L and J110) and human from Papua (H076 and H086), respectively, with concentration of 10^8 CFU/mL intraperitoneally.

The results showed clinical symptoms of mice after infected with *S. suis* from various strains included depression, fatigue, dull hair, swollen watery eyes, ascites, erythema, tremors and tachypnea. The appearance of septic shock in mice that infected by *S. suis* could be observed with specific clinical sign and death in 24-48 hours. Mice that died in 24-48 hours were necropsied, the livers and kidneys removed and preserved in formalin 10% for histopathology preparation with hematoxylin and eosin (HE) staining. The death of mice after infected with *S. suis* from various strains occurred in 24 hours (26.67%) and 48 hours (20%), with the highest percentage of death in 24 hours (66, 66%) after infected with *S. suis* J123L isolated from pigs in Papua. The histopathologic liver changes of mice after infected with various strains of *S. suis* revealed perivascularitis, sinusoid not radiier, fatty liver degeneration and necrosis. The mice post-infected with *S. suis* isolates of pig (J123L) and humans (H076 and H086) from Papua caused the most severe livers damage. The histopathologic renal changes of mice after infected with various strains of *S. suis* were signed of nephrosis, congestion or hemorrhagi, inflammatory cell infiltration in interstitial renal tubules, hydropic degeneration and necrosis of the epithelial renal tubules. The mice post-infected with *S. suis* isolated from pig in Papua (J123L) and Germany (735) caused the most severe kidneys damage. Generally could be concluded that the signs of *toxic shock* and the death of mice that occurred in 24-48 hours revealed the signs of *Streptococcal Toxic Shock Syndrome*.

Keywords: *Streptococcus suis*, zoonotic, Papua, human, mice, liver, and kidney



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ADAM DARSONO, Prof. Dr. drh. Siti Isrina Oktavia Salasia

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