



Buku Prosiding ABSTRAK

Temu Ilmiah Nasional dan Rapat Kerja

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Local Humoral Adaptive Immune Response Influence On The Occurrence Of Infertility In Women Infertile Couple With Non-Specific Vaginitis Due To Cross Reaction Between Staphylococcus Aureus Snd Spermatozoa

Muhammad Anas, Aulanni'am, I Wayan Arsana Wiyasa, Teguh Wahyu Sardjono, Sumarno

The prevalence of infertile couples varies between 10-40%. In Indonesia 17%, East Java 26%, Surabaya 25%, Malang 18% and Mojokerto 25%. Men factors hand of approximately 40%, the rest female factors. The cause of idiopathic infertility approximately 10-30% and allegedly much related to immunological disorders and previous infections. Non-specific vaginitis (VNS) occurring at women infertile couples due to polymicrobial. Staphylococcus aureus (*S. aureus*) contributes by 21%.

The aim of research to prove cross reaction between *S. aureus* with spermatozoa.

Research conducted by biocomputation and invitro.

In biocomputation research obtained five main protein homolog between protein of human spermatozoa and protein of *S. aureus*. Homologous sequences obtained by 26-44% and homologous structures ranging from 0.314, 0.332, 4.99, 6.16, and 26.40 Å. Analysis of antigenicity and epitope's expression confirmed that they allow it to be recognized by the same antibodies.

In invitro study with 2 isolates of *S. aureus* which isolate from fertile female partner and infertile female partner. The humoral adaptive immune response occurs in fertile and infertile female partner experiencing VNS due to *S. aureus*. The molecular weight (MW) of *S. aureus*'s Omp (outer membrane protein) of fertile isolates that was recognized by the s-IgA mucus of the uterine cervix of fertile female partner was 52 kDa while the *S. aureus*'s Omp of infertile isolates was recognized by the s-IgA mucus of the uterine cervix of infertile female partner was 49 kDa. Both of these proteins immunized into mice so that the resulting IgG-fertile and Ig-infertile. Obtained cross reaction between IgG-fertile and Ig-infertile to human sperm's Omp. MW of human sperm's Omp that recognized by IgG-fertile is 43 to 63 kDa and recognized by IgG-infertile is 23 to 58 kDa. Human sperm's Omp that cross-reacting with *S. aureus*'s Omp is located in the head, neck and tail sperm. Magnitude response of cross reaction between human sperm's Omp with IgG-fertile significantly different with IgG-infertile, $p = 0.000$.

As conclusion that VNS due to *S. aureus* may trigger an immune response with s-IgA antibodies produced cross-reacting with human sperm's Omp.

Keywords: Infertility, VNS, *S. aureus*, Omp, s-IgA, Sperm.

Pengaruh Respon Imun Adaptif Humoral Lokal terhadap terjadinya Infertilitas pada Wanita Pasangan Infertil dengan Vaginitis Non Spesifik akibat Reaksi Silang antara *Staphylococcus aureus* dan Spermatozoa.

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*Prevalensi pasangan infertil bervariasi antara 10 - 40%. Faktor penyebab pihak pria sekitar 40%, selebihnya faktor wanita. Penyebab idiopatik sekitar 10-30% dan diduga berkaitan dengan kelainan imunologis dan infeksi sebelumnya. Vaginitis non spesifik (VNS) yang terjadi pada wanita pasangan infertil disebabkan polimikroba. *S. aureus* berperan sebesar 21%.*

*Tujuan penelitian untuk membuktikan ada reaksi silang antara *S. aureus* dengan spermatozoa.*

Penelitian dilakukan secara biokomputasi dan invitro.

*Pada penelitian biokomputasi didapatkan lima protein homolog utama antara protein spermatozoa manusia dan protein *S. aureus*. Homologi sekuens yang didapatkan sebesar 26-44% dan memiliki homologi strukturnya mulai dari 0,314, 0,332, 4,99, 6,16, dan 26,40 Å. Analisis antigenisitas dan ekspresi epitop menegaskan bahwa mereka memungkinkan untuk dapat dikenali oleh antibodi yang sama.*

*Penelitian invitro dengan 2 isolat *Staphylococcus aureus* yaitu isolat dari wanita pasangan fertil dan isolat dari wanita pasangan infertil. Respon imun adaptif humoral terjadi pada wanita pasangan fertil maupun infertil yang mengalami VNS akibat *S. aureus*. Berat molekul Omp (outer membrane protein) *S. aureus* isolat fertil yang dikenali oleh s-IgA mukus servik uteri dari wanita pasangan fertil adalah 52 kDa sedangkan *S. aureus* isolat infertil yang dikenali oleh s-IgA mukus servik uteri dari wanita pasangan infertil adalah 49 kDa. Kedua protein tersebut dimunisasikan ke mencit sehingga dihasilkan IgG-fertil dan IgG-infertil. Didapatkan reaksi silang antara IgG-fertil dan IgG-infertil dengan Omp spermatozoa. BM Omp spermatozoa yang dikenali IgG-fertil adalah 43 sd 63 kDa dan yang dikenali IgG-infertil adalah 23 sd 58 kDa. Letak Omp spermatozoa yang bereaksi silang dengan Omp *S. aureus* terletak di kepala, leher dan ekor spermatozoa. Besaran respon reaksi silang antara Omp spermatozoa dengan IgG-fertil berbeda bermakna dengan IgG-infertile, $p=0.000$.*

*Kesimpulan bahwa VNS akibat *S. aureus* dapat memicu respon imun dengan diproduksinya s-IgA yang bereaksi silang dengan Omp spermatozoa.*

Kata Kunci: *Infertilitas, VNS, *S. aureus*, Omp, s-IgA, Spermatozoa.*

