



GAGAL GINJAL AKUT

**PADA KASUS UNIK DAN
TINJAUAN IMUNOLOGIS**

**Djoko Santoso
Anny Setijo Rahaju
Jefferson Caesario**

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Prakata

Gagal Ginjal Akut (GGA) masih menjadi tantangan besar dalam dunia kedokteran modern, dengan tingkat morbiditas dan mortalitas yang signifikan di seluruh dunia, bahkan besar kemungkinan hal ini terus berlanjut mengingat perkembangan pengetahuan terkait GGA sangat cepat. Sebagai kondisi yang dapat memengaruhi hingga 50% pasien di unit perawatan intensif dan menyebabkan sekitar 2 juta kematian setiap tahun secara global, pemahaman mendalam tentang kondisi ini menjadi penting bagi praktisi kesehatan.

Buku “Gagal Ginjal Akut pada Kasus Unik dan Tinjauan Imunologis” ini merupakan hasil dari upaya pemahaman melalui bacaan referensi tentang kasus GGA dan didasarkan pengalaman klinis. Tujuan utama penulisan buku ini adalah diniatkan sebisanya untuk menyajikan perspektif baru dalam memahami GGA melalui pendekatan berbasis kasus dan eksplorasi aspek imunologisnya yang mendalam, sekaligus berupaya sebisa mungkin untuk menjembatani kesenjangan antara teori dasar dan aplikasi klinis. Ini bisa dipahami mengingat mekanisme patofisiologi terjadinya gagal ginjal akut sangat kompleks yang melibatkan beberapa faktor seperti hipoksia persisten, penurunan perfusi kapiler peritubular,

peningkatan pembentukan spesies oksigen reaktif, dan peradangan ginjal. Hal yang lebih kompleks lagi terkait epitel tubulus mengalami regenerasi, mekanisme maladaptif, yang menyebabkan konsekuensi jangka panjang yang merugikan pada fungsi dan struktur ginjal. Sisi lain, sel tubular berkembang biak dengan maksud mengembalikan struktur tubular normal; namun yang terjadi sel-sel ini justru berperan penting dalam perkembangan fibrosis tubulointerstitial hingga mengalami penghentian siklus sel dan modifikasi epigenetik, proliferasi tubular yang tidak proporsional, pembentukan TGF β , dan ekspansi myofibroblast. Itulah setidaknya bentuk kekomplekan respon maladaptif disamping masih banyak pemicu respons maladaptif lainnya. Oleh karena itu, pemahaman mendalam mengenai patobiologi AKI perlu dikuasai untuk meningkatkan layanan termasuk menghindari perkembangannya menjadi penyakit ginjal kronis dikemudian hari.

Skop buku ini meliputi kasus gagal ginjal akut yang unik, tidak hanya menyertakan perspektif klinis semata, tetapi mencakup seperti: a) mekanisme molekuler (khususnya stres oksidatif, proliferasi tubulus, dan peradangan) yang keterlibatannya dalam transisi Gagal Ginjal Akut dan Gagal Ginjal Akut ke Penyakit Ginjal Kronis, b) signifikansi molekuler dari kejadian berulang. Pada konteks Gagal Ginjal Akut terhadap perkembangan Penyakit Ginjal Kronis, c) dampak penargetan protein tertentu untuk mempelajari relevansinya dalam patobiologi Gagal Ginjal Akut, d) mekanisme renoprotektif farmakologis atau antibiotik untuk mengurangi Gagal Ginjal Akut, e) munculnya biomarker baru untuk deteksi dini penyakit Penyakit Ginjal Kronis. Sasaran pembaca buku ini mencakup para dokter spesialis ginjal dan penyakit dalam, dokter umum, residen, mahasiswa kedokteran, peneliti di bidang nefrologi dan imunologi, serta praktisi kesehatan lain yang tertarik memperdalam pemahaman mereka tentang Gagal Ginjal Akut. Materi dalam buku ini sebisa mungkin disusun secara sistematis, dimulai dari konsep dasar patofisiologi Gagal Ginjal Akut hingga pembahasan kasus-kasus unik yang memberikan pembelajaran berharga. Lebih dari itu buku ini menyajikan pembahasan komprehensif tentang mekanisme imunologis dalam Gagal Ginjal Akut,

termasuk peran hipoksia persisten, perubahan perfusi kapiler peritubular, peningkatan spesies oksigen reaktif (ROS), serta proses inflamasi yang kompleks sebagaimana yang disebut sebelumnya. Kasus-kasus yang dibahas dipilih secara cermat untuk mengilustrasikan variasi presentasi klinis dan tantangan penanganan GGA dalam praktik sehari-hari.

Dalam kesempatan ini, kami ingin menyampaikan apresiasi mendalam kepada rekan-rekan di Departemen Nefrologi dan Imunologi yang telah berbagi wawasan dan pengalaman klinis mereka yang mana ini didapat dari forum-forum ilmiah berkelanjutan. Ucapan terima kasih juga kami sampaikan kepada para pasien yang kasusnya menjadi pembelajaran berharga dalam buku ini, serta kepada pihak penerbit yang telah memfasilitasi publikasi.

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Akhir kata, kami berharap buku ini dapat menjadi referensi berharga bagi komunitas medis dan berkontribusi pada peningkatan pemahaman serta penanganan GGA di Indonesia. Saran dan masukan dari pembaca akan sangat berharga untuk penyempurnaan edisi mendatang.

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