Updates of pulmonary renal syndrome in ICU

Essay

Submitted for partial fulfillment of Master Degree in Intensive Care Medicine

By

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Ayman I. Abd El Hakam

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- **ABMA-GS:** Anti-basement membrane antibody associated Goodpasture's syndrome.
- **ACEI :** Angiotensin converting enzyme inhibitor.
- **ADH :** Antidiuretic hormone.
- **ANCA:** Antineutrophilic cytoplasm antibody.
- **ANP :** Atrial naturetic peptide.
- **Anti – GBM:** Anti – glomerular basement membrane.
- **APS :** Antiphospholipid syndrome.
- **ARDS:** Adult respiratory distress syndrome.
- **ARF :** Acute renal failure.
- **ATP :** Adenosine triphosphate.
- **BOOP :** Bronchiolitis obliterans organizing pneumonia.
- **BUN :** Blood urea nitrogen.
- **C_3 :** Complement 3.
- **C-ANCA :** Cytoplasmic- antineutrophilic cytoplasm antibody.
- **CD :** Cluster differentiation.

- **CG :** Cryoglobulinemia.
- **CIHD :** Conventional intermittent hemodialysis.
- **CO_2 :** Carbon dioxide.
- **CPE :** Cytopathic effect.
- **Cr. Cl.:** Creatinine Clearance.
- **CRRT:** Continuous renal replacement therapy.
- **CT :** Computerized tomography.
- **CXR :** Chest X- ray.
- **d :** Days.
- **DAH :** Diffuse alveolar hemorrhage.
- **DCT :** Distal convoluted tubule.
- **DO_2 :** Oxygen delivery.
- **DPPC:** Dipalmitoyl phosphatidyl choline.
- **EDTA:** Ethylenediamine tetraacetic acid.
- **ELISA :** Enzyme linked immunosorbent assay.
- **ESR :** Erythrocyte sedimentation rate.
- **FE_{Na} :** Fractional excretion of sodium.
- **g :** Grams.
- **GFR :** Glomerular filtration rate.
- **H^+ :** Hydrogen ion.

- **Hb :** Hemoglobin.
- **HCO_3:** Bicarbonate ion.
- **H_2CO_3:** Carbonic acid.
- **H&E :** Haematoxylin and Eosin.
- **H_2O :** Water.
- **HFR :** Hemorrhagic fever with renal syndrome.
- **HGF :** Hepatocyte growth factor.
- **HLA :** Human leukocytic antigen.
- **HPS :** Hantavirus pulmonary syndrome.
- **HSP :** Henoch- Schonlein purpura.
- **I - Cells:** Intercalated cells.
- **ICU :** Intensive care unit.
- **IF :** Immunofluorescence.
- **Ig :** Immunoglobulin.
- **IgA N:** IgA nephropathy.
- **INF :** Interferon.
- **JGA :** Juxtaglomerular apparatus.
- **K^+ :** Potassium ion.
- **LH :** Loop of Henle.
- **MMF:** Mycophenolate mofetil.

- **MPO :** Myeloperoxidase.
- **MSC :** Mesenchymal stem cells.
- **Na^+ :** Sodium ion.
- **NH_3 :** Ammonia.
- **NH_4 :** Ammonium.
- **NP :** Nucleoproteins.
- **NSAIDs :** Non steroidal anti-inflammatory drugs.
- **O_2 :** Oxygen.
- **P-ANCA :** Perinuclear- antineutrophilic cytoplasm antibody.
- **P- Cells:** Principal cells.
- **PAMs :** Pulmonary alveolar macrophages.
- **PCO_2 :** Partial carbon dioxide pressure.
- **PCT :** Proximal convoluted tubule.
- **PD :** Peritoneal dialysis.
- **PH :** Negative logarithm of H^+.
- **PO_2 :** Partial oxygen pressure.
- **Pr3 :** Proteinase 3 .
- **RBCs :** Red blood cells.
- **RRT :** Renal replacement therapy.

- **$:** Syndrome.
- **SDF-1:** Stromal cell-derived factor-1.
- **SP :** Surfactant protein.
- **Sr. Cr.:** Serum creatinine.
- **Th :** T-helper lymphocyte.
- **TNF :** Tumour necrosis factor.
- **UO :** Urine output.
- **VO_2 :** Oxygen uptake.
- **V/Q :** Ventilation-perfusion ratio.

Introduction

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Pulmonary–renal syndrome is defined as the combination of diffuse alveolar haemorrhage (DAH) and glomerulonephritis **(*Jayne, 2002)***. Several types of immunologic injury as well as other non immunologic mechanisms are involved in the syndrome's pathogenesis **(*Balow, 2003),*** such as:

- Antiglomerular basement membrane (anti-GBM) antibodies as in Goodpasture‘s syndrome **(*Pusey, 2008).***
- Antineutrophil cytoplasm antibodies (ANCA) as in Wegener‘s granulomatosis, microscopic polyangiitis، Behcet‘s disease, churg-strauss syndrome, Henoch-schonlein purpura ***(Nachman, 2005)***.
- Immunocomplexes as in systemic lupus erythromatosis (SLE)، systemic sclerosis and rarely in rheumatoid arthritis ***(Schwarz, 2004)***.
- Thrombotic microangiopathy as in antiphospholipid syndrome (APS) ,thtombotic thrombocytopenic purpura ، malignancies and infections.

A significant number of patients will present with rapid clinical deterioration and require admission to the intensive care unit **(*Anaya, 2005)***. This is attributed either to exacerbation of the disease activity itself, or to infectious complications secondary to severe immunosuppressive treatment ***(Guntupalli, 2008)***.

Pulmonary–renal syndromes represent a major challenge in the ICU since the outcome is based on early and accurate diagnosis and aggressive treatment **(*Venn, 2005)***. Nevertheless, mortality can reach 25–50% ***(Brett, 2008)***.

Aim of the Work

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To focus Updates of pulmonary renal syndrome in critically ill patients.