HISTORY OF HEPARIN USE IN NEPHROLOGY

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INTRODUCTION AND AIMS: This year marks the 90th anniversary of the first use of heparin in hemodialysis and 50 years since heparin was switched on in a combined treatment regimen for some active forms of glomerulonephritis.

METHODS: In 1916, J. McLean was a second-year student at the Johns Hopkins University School of Medicine and a pupil of W.H. Howell isolated from dog liver cells a phosphatide that had anticoagulant properties and described its observations in the American Journal of Physiology. The following year, he made up of practicing medicine. In 1918 W.H. Howell together with his other student L.E. Holt singled out another anticoagulant and called it heparin. The dispute about the authorship of the discovery of heparin continues to the present day. Some point to J. McLean, others call W. H. Howell. The attempt to nominate J. McLean for the Nobel Prize (posthumously) was rejected, but evidently his discovery changed the vector of research W.H. Howell. In 1933-1937, the Canadian physiologist C. Best and his colleagues continued their research to obtain a low-toxicity heparin. The end of the 40’s with the production of purified drug began the era of heparin therapy. In the second half of 80’s were created a variety of drugs of low molecular weight heparins.

RESULTS: Heparin belongs to a class of antithrombotic drugs. Blocking of the process of intravascular (intraglomerular) coagulation heparin reduces the kidney immune inflammation. Heparin is not only an anticoagulant; it has diuretic, natriuretic, antihypertensive, antiproteinuric, anticomplementary, anti-inflammatory and lipolytic effects that is affects many manifestations of chronic kidney disease (CKD). On January 13, 1928, G. Haas first used heparin in hemodialysis for a man with end stage renal disease. In 1968, P. Kincaid-Smith published the results of heparin treatment of the first group of patients with oliguric acute renal failure due to diffuse proliferative glomerulonephritis (3 patients), polyarteritis nodosa (2 patients), and thrombotic thrombocytopenic purpura (1 patient). Today heparin is the main drug for the treatment and prevention of acute venous thrombosis complicating the nephrotic syndrome. It is prescribed in some forms of active glomerulonephritis in combination with steroids and immunosuppressive drugs. It is used to treat thrombotic microangiopathy with renal disorder due to typical and atypical hemolytic uremic syndrome and after kidney transplantation. Its purpose is indicated in patients with acute nephropathy and lupus nephritis associated with antiphospholipid syndrome. He is prescribed for the prophylaxis of deep vein thrombosis and other thrombotic complications in patients with acute and chronic renal insufficiency. Heparin is a standard anticoagulant therapy in patients on hemodialysis. The use of heparin in pregnant women with CKD increases the frequency of a favorable neonatal outcome.

CONCLUSIONS: Heparin is an important component of drug therapy in nephrologic patients.