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Research Progress of Diabetic Rat Model with Hypertension

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Objective Diabetes mellitus coexisting with hypertension can accelerate and increase the occurrence and development of cardiovascular disease, stroke, diabetic nephropathy and retinopathy, and the establishment of corresponding animal models can provide the clinical evidence for hypertension with diabetes mellitus. The model of diabetic rats with hypertension was established in order to find the most reasonable model.

Methods Using the method of literature, the key words in Pubmed were: "diabetes mellitus"; "hypertension"; "rat"; The qualifying language for animal model is English, with a limitation period of 2008-2018. A total of 157 papers were collected and included into the standard: ①exclude the relevant model of renal hypertension; ②No other diseases other than diabetes and hypertension; A total of 42 studies were included.

Results There are 6 models of diabetes mellitus with hypertension in common use at present.

①Surgically induced bilateral renal artery stenosis in rats, followed by low-dose STZ intraperitoneal injection and feeding high-calorie diet. ②special chemical (STZ or alloxan) directly injected into Spontaneously Hypertensive Rat (SHR) or combined with specific dietary induction; ③Hybridization of SHR and spontaneously diabetic rats; ④Inbred purebreds with a propensity to spontaneously diabetes, obese SHR and obese Zucker rats; ⑤Diabetes was induced by STZ injection with SHR in primary hypertensive rats. ⑥High-fat diet plus intraperitoneal injection of STZ into diabetic model combined with 1% NaCl water feeding.

Conclusions The preparation methods of several models have their own advantages and disadvantages. From the point of view of the pathogenesis of human diseases, it is more ideal to make inbred model with the tendency of spontaneous diabetes. From the point of view of economy and economy, the low-dose STZ intraperitoneal injection of SHR into diabetic hypertensive rat model is low cost, high model rate and convenient. The model rats with type 2 diabetes mellitus and hypertension were induced by high-fat diet plus STZ plus 1% NaCl by intraperitoneal injection of STZ in combination with drinking water. Relatively close to the course of human disease, the cost is lower, and it is the most widely used modeling method at present. Conclusion: Different research targets correspond to different animal model vectors. In the future, we should try to establish a more perfect model of diabetes mellitus with hypertension, which is more similar to human disease, so as to provide a good platform for disease prevention and treatment.