Effect of Ischemia-Reperfusion Injury on the Histological Structure of Vas Deferens with Reference to Cajal-Like Cells in Adult Albino Rats

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Abstract

Introduction: C-kit positive cells outside the gastrointestinal tract (GIT) which are morphologically similar to interstitial cells of cajal (ICC) in the GIT were supposed to play same role of motility in organs other than the GIT. **Aim of the work:** To observe the effect of ischemia reperfusion injury I/R injury on the rat vas deferens with reference to interstitial cajal like cells (ICLC). **Materials and Methods:** This study was performed on 35 male albino rats weighing 180-200 gm divided into 3 main groups; control group (A), ischemia group (B) and reperfusion group (C) after applying spermatic cord torsion for one hour followed by detorsion. All sections from the different groups were stained with heamatoxylin and eosin (H & E), toludine blue and c-kit immunohistochemichal staining and morphometric study was done recording the mean area percent of c-kit positive (ICLC). **Results:** The examined H & E sections showed histological changes in ischemia group and the first two subgroups of reperfusion C1, C2 and relative recovery in the other two subgroups C3, C4. The mean area percentage of c-kit positive ICLC in the ischemia group and the first two subgroups C1, C2 of reperfusion was significantly decreased compared to the control. The other two subgroups C3, C4 of the reperfusion group showed relatively increasing of the mean area percentage of the c-kit positive ICLC compared to the control. **Conclusions:** it was concluded that I/R injury had evident histopathologicl effects on the vas deferens that affected also its ICLC. This changes might explain abnormal vas deferens motility in I/R injury and might explain some of infertility causes.

Key words: interstitial cajal like cells-interstitial cajal cells-vas deferens-ischemia reperfusion injury.

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List of Abbreviations

µm	Micro meter
ATP	Adenosine 5'-triphosphate
BSA	Bovine serum albumin
C	Complement
CSF	Colony stimulating factor
GIT	Gastrointestinal tract
H&E	Hematoxylin and eosin
hr.	Hour
HRP	Horse radish proxidase
I/R	Ischemia-reperfusion
ICC	Interstitial cell of Cajal
ICC-CM	Interstitial cell of Cajal- circular muscle
ICC-DMP	Interstitial cell of Cajal- deep muscular plexus
ICC-IM	Interstitial cell of Cajal- intramuscular
ICC-LM	Interstitial cell of Cajal- longitudinal muscle
ICC-MP	Interstitial cell of Cajal- myenteric plexus
ICC-SEP	Interstitial cell of Cajal- connective tissue septa
ICC-SM	Interstitial cell of Cajal- submucosa
ICC-SMP	Interstitial cell of Cajal- submucosal plexus
ICC-SS	Interstitial cell of Cajal- subserosa
ICLC	Interstitial Cajal like cell
mAbs	Monoclonal antibodies
ml	Milli liter
mRNA	Messenger ribonucleic acid
nm	Nanometer
P	Probability

PBS	Phosphate buffer saline
PDGF	Platlet derived growth factor
PMN	Polymorph nuclear cells
ROS	Reactive oxygen species
SD	Standard deviation
SMC	Smooth muscle cells
TCs	Telocytes
TEM	Transmission electron microscopy
TUNEL	Terminal deoxynucleotidyl transferase dUTP nick end labeling
UUT	Upper urinary tract
VD	Vas deferens
wk.	Week
XDH	Xanthine dehydrogenase
XO	Xanthine Oxidase

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