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论著

前列地尔Lipo-PGE 1干预肝脏血流灌注的实验研究

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摘要 目的：探讨前列地尔脂微球(liposome prostaglandin E_1,Lipo-PGE_1)不同用药时间和途径对肝脏血流灌注的作用机制。

方法：选取健康成年犬12只，经左小隐静脉注射Lipo-PGE_1 1 μg/kg，速度均为0.05 μg·kg^{-1}·min^{-1}。分别于0 min、5 min、15 min、30 min后行肝脏CT灌注成像（computed tomography perfusion imaging，CTPI）扫描，计算肝动脉灌注量(hepatic arterial perfusion,HAP)、门静脉灌注量 (portal vein perfusion,PVP)、总肝灌注量（total liver perfusion,TLP），对照分析不同时间Lipo-PGE 1对肝脏血流灌注的影响。选取健康成年犬24只，随机平均分成4组：对照组、外周静脉用药组、肝动脉组、肠系膜上动脉组。Lipo-PGE_1的用药量均为1 μg/kg、用药速度均为0.05 μg·kg^{-1}·min^{-1}，0.9%生理盐水用量为20 mL。各组用药5 min后行肝脏CTPI，比较分析不同途径给予Lipo-PGE_1对肝脏血流灌注的影响。

结果：经外周静脉注射Lipo-PGE 10 min、5 min、15 min、30 min后CTPI测量的HAP(mL·min^{-1}·mL^{-1})分别为：0.22±0.65、0.24±0.65、0.22±0.69、0.22±0.06；PVP (mL·min^{-1}·mL^{-1})：1.22±0.40、1.88±0.59、1.55±0.55、1.29±0.57；TLP (mL·min^{-1}·mL^{-1})分别为：1.44±0.42、2.12±0.61、1.77±0.56、1.51±0.58。方差分析显示HAP组间比较无显著差异（F=0.249，P>0.05），而PVP、TLP组间比较有显著差异（F=3.812，P<0.05）、（F=3.805，P<0.05）。5 min组PVP、TLP增加最为显著，15 min、30 min时两者仍处于高值水平。对照组和外周静脉组、肝动脉组、肠系膜上动脉组的HAP (mL·min^{-1}·mL^{-1})分别为：0.22±0.06、0.24±0.06、0.31±0.07、0.26±0.05；PVP (mL·min^{-1}·mL^{-1})分别为1.28±0.38、2.33±0.41、2.37±0.55、2.83±0.94；TLP (mL·min^{-1}·mL^{-1})分别为：1.50±0.40、2.57±0.42、2.67±0.58、3.09±0.94。方差分析显示HAP组间比较无显著差异（F=2.248，P>0.05），而PVP、TLP组间比较有显著差异（F=6.892，P<0.01）、（F=7.802，P<0.01）。经肠系膜上动脉给药较其它途径给药PVP、TLP增加趋势更为显著。

结论：Lipo-PGE_1能显著增强肝脏血流灌注，且主要影响门静脉灌注分量，介入技术可为快速改善肝血流灌注提供有效途径。

关键词 肝 灌流 前列地尔 介入技术 脂微球-PGE1

分类号 R364.1

Intervention of Lipo-PGE_1 on liver blood perfusion by different time and medication: a empirical study

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Abstract

<FONT face=Verdana>AIM: To explore the effect and mechanism of liposome prostaglandin E₁(Lipo-PGE₁) on liver blood perfusion by different time and medication.
METHODS: Twelve healthy adult dogs were injected with Lipo-PGE₁₁ μg/kg via left small saphenous vein at speed of 0.05 μg·kg⁻¹·min⁻¹.Liver computed tomography perfusion imaging (CTPI) was performed on 0,5,15 and 30 min,and the

value of hepatic arterial perfusion (HAP),portal vein perfusion (PVP) and total liver perfusion (TLP) among groups were compared.The impacts of Lipo-PGE₁ on liver haemodynamics at different time were investigated.Twenty-four health dogs were randomly divided into four groups: control group,peripheral vein group,hepatic artery group and superior mesenteric artery group.Liver CTPI was performed at 5 min after 1 μg/kg Lipo-PGE₁ administration in those groups.The values of HAP,PVP and TLP were compared and effects of Lipo-PGE₁ on liver blood flow by different medication were observed.
RESULTS: The values of liver perfusion (mL • min⁻¹ • mL⁻¹) at 0,5,15 and 30 min after 1 μg/kg Lipo-PGE₁ administration via vein were as follows: HAP: 0.22 ± 0.65,0.24±0.65,0.22±0.69,0.22±0.06;PVP: 1.22±0.40,1.88±0.59,1.55±0.55,1.29 ±0.57;TLP: 1.44±0.42,2.12±0.61,1.77±0.56,1.51±0.58,respectively.No significant difference in HAP among groups was observed,but in PVP and TLP,significant differences (F=3.812,P<0.05;F=3.805,P<0.05) among groups were found.The values of PVP and TLP were most obviously increased at 5 min,and the values of PVP and TLP were still on the high level at 15 min and 30 min.The values of liver perfusion (mL • min⁻¹ • mL⁻¹) by different medication were as fellows: HAP: 0.22±0.06,0.24±0.06,0.31±0.07,0.26±0.05;PVP: 1.28± 0.38,2.33±0.41,2.37±0.55,2.83±0.94;TLP: 1.50±0.40,2.57±0.42,2.67± 0.58,3.09 ±0.94,respectively.No significant difference in HAP among groups (F=2.248,P>0.05) was found,but in PVP and TLP group,significant differences (F=6.892,P<0.01;F=7.802,P<0.01) among groups were observed.In addition,superior mesenteric artery group showed higher value of PVP and TLP than other methods.
CONCLUSION: Lipo-PGE₁ obviously increases liver blood perfusion,especially for portal vein perfusion.Interventional technology provides an effective pathway to improve hepatic perfusion.</FONT>

Key words Liver Perfusion Alprostadil Interventional technology Liposome prostaglandin E1

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