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Wounding characteristics in animals wounded with powerful bomb blast

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Abstract Objective: To study the wounding characteristics in the animals wounded by shell fragments and blast waves due to highly explosive warheads. Methods: The highly explosive warheads were triggered with electroprimers and the experimental animals were arranged in a fan-shape to surround the explosive center. 0 to 72 h after the explosion, the animals were observed with surgical dissection. Results: 86.7% of the animals were wounded by the shell fragments which was the main cause of instant or early death of the animals near the explosive center. The rate of blast wave injury was 82.7%. Conclusion: The shell fragments and blast waves are the main wounding factors during the explosion of powerful bombs and high speed shell fragments increase the wounding effects of blast waves.

Key words explosion; trauma; shell fragment; blast wave

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266例健康人血清蛋白电泳参考值及两种电泳载体结果比较

Electrophoretic reference value of serum protein of 266 healthy persons and its comparison between 2 kinds of electrophoretic carrier

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血清蛋白电泳技术是临床化学工作中重要而实用的检测手段,它对于体液中蛋白质成分的分析甚至某些疾病的诊断起着决定性作用。随着醋酸纤维素薄膜等各种电泳载体的应用发展及更先进的电泳扫描仪器的推出,其参考值可能存在差异[1]。本科最近引进 Helena EDC电泳扫描仪,为评价仪器、建立参考值(包括两种蛋白电泳载体)我们做了一些工作,总结如下。

1 检查对象

重庆市郊区农民、工人、国家干部、某小学学龄儿童经体检,排除心、肺、肝、肾等主要脏器疾病,脑血管病,高血压病,糖尿病等代谢内分泌疾病。选出男性 127人,年龄 18~78岁(平均 42.1岁);女性 100人,年龄 17~84岁(平均 40.6岁);学龄儿童 39人,其中男 23人、女 16人,年龄 5~8岁(平均 6.1岁)。于清晨空腹取血及时分离血清,剔除溶血、黄疸及脂血,于当日检查或 -20℃保存三日内检查。

2 材料

2.1 Helena EDC

电泳扫描仪及处理系统。

2.2 Helena电泳工作台

电泳仪,加样器。

2.3 电极液

巴比妥缓冲液 pH8.6离子强度 0.075

2.4 电泳膜

醋酸纤维素薄膜(浙江黄岩四青生化材料厂产)。TITAN III型电泳膜(Helena公司产)。

2.5 试剂

2.5.1 染色液 丽春红 S(上海化学试剂厂产)。

2.5.2 脱色剂 5%醋酸液。

2.5.3 透明液 醋纤膜透明液、TITAN膜透明液。

3 方法

3.1 电泳条件

电压 180伏电泳 15 min。

3.2 染色条件

丽春红 S染色 10 min,脱色 3次各 3 min。

3.3 透明条件

干燥(TITAN膜用无水甲醇脱水)后透明,醋纤膜 3 min,TITAN膜 10 min。

3.4 结果统计

将电泳结果分别按材料、性别、年龄分组用 Microsoft Excel 7.0做假设不等方差 t 检验,分别求出 $\bar{x}$、t 值、P 值、标准差,并用($\bar{x}\pm 1.96s$)表示结果。

4 结果

见表 1~3 (下转 804页)

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protein was extracted with acid-ethanol. 3) The TGFβ was extracted from the platelet protein with sequential gelfiltration on Bio-Gel P60 columns, first in the absence and then in the presence of altra-pure urea. All the these steps were performed under acidic condition to prevent adsorption of TGFβ to the vial walls. In addition, volutile solvents and buffers allowing easy removal of solvent and salt by hyphilization were used. **Results:** SDS-PAGE electrophoresis and auto-scanning by computer showed that the homogeneity of the growth factor obtained with this method could be up to 89.38%. In the presence of EGF, it could stimulate the NRK cells to grow as multi-clone in soft agar culture at a concentration of 10 ng/ml. **Conclusion:** The purified TGFβ has high homogeneity and bioactivity. The method for its preparation is easier, faster and more convenient as compared with those previously used by other researchers.

Key words TGFβ; isolation; purification; blood; platelet; human

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表 1 266例健康人血清蛋白电泳结果% ($\bar{x}\pm 1.96s$)

年龄 (岁)	例数	ALB	α_1	α_2	β	γ
5~ 8	39	63.1± 5.5*	4.4± 1.3*	8.7± 2.3*	9.7± 1.5*	14.3± 4.5*
17~ 44	146	61.9± 6.9	2.9± 1.1	6.8± 2.6	10.8± 2.9	17.7± 5.8
45~ 59	52	61.2± 5.6	2.9± 1.0	7.0± 2.8	11.2± 2.4	17.8± 5.3
60~ 84	29	59.8± 7.9▲	3.0± 1.2	7.7± 3.2	11.3± 3.0	18.2± 5.7

*: $P<0.05$儿童与成人各期比较;▲: $P<0.05$老年期与老年前期及青中年期比较

表 2 227例血清蛋白醋纤膜电泳结果% ($\bar{x}\pm 1.96s$)

	例数	ALB	α_1	α_2	β	γ
成年男性	127	62.7± 5.6*	2.8± 1.0	6.8± 2.8	10.9± 2.6	16.8± 4.5*
成年女性	100	59.8± 7.0	2.9± 1.3	7.2± 2.6	11.0± 3.1	19.0± 6.0
合计	227	61.4± 6.9	2.9± 1.1	7.0± 2.7	10.9± 2.8	17.8± 5.6

*: $P<0.05$成年男女 ALB和γ比较

表 3 血清蛋白电泳 TITAN膜与醋纤膜结果比较% ($\bar{x}\pm 1.96s$)

	例数	ALB	α_1	α_2	β	γ
TITAN膜	229	57.3± 6.4	3.1± 1.7	9.7± 2.9	12.3± 2.8	17.6± 6.0
醋纤膜	227	61.4± 6.9	2.9± 1.1	7.0± 2.7	10.9± 2.8	17.8± 5.6
P值	-	$P<0.01$	$P<0.01$	$P<0.01$	$P<0.01$	$P<0.01$

5 讨论

① 儿童及成人电泳结果比较: 将结果按年龄分学龄儿童期 (5~ 8岁),青中年期 (17~ 44岁),老年前期 (45~ 59岁),老年期 (60~ 84岁)四组,做 t检验。儿童与成人各期比较 P值均小于 0.05相差显著,见表 1 其中 ALB、α_1、α_2儿童均高于成人各期。成人各组除 ALB带老年期与老年前期及青中年期差别显著外 ($P<0.05$)其余各组差别均不显著 ($P>0.05$)。② 成年男女电泳结果比较: 经 t检验,见表 2 成年男女 ALB和γ带相差显著 ($P<0.05$)其中 ALB带男性高于女性,γ带则男性低于女性。α_1、α_2、β带相差均不显著 ($P>0.05$)。其结果与相关的文献报道一致[2,3]。③ 醋纤膜与 Helena TITANIII型膜电泳结果比较: 将血清标本做醋纤膜电泳的同时用 Helena公司 TITANIII型电泳膜做载体电泳。由表 3可见,两种载体结果除γ带相差不显著外,余均相差显著。TITAN膜β、α_1、α_2高于醋纤膜,而 ALB低于醋纤膜。由此推测血清蛋白的各组分与 TITAN膜亲和性大于醋纤膜,电泳时血清蛋白过原点后 (γ带在原点)一路滞留,造成β、α_2、α_1带量值高,而 AlB量值偏低。提示由于载体成分及做工不同,对血清蛋白吸附、分离等能力不同会造成电泳结果的差异。

关键词 血清蛋白;电泳

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