

平衡固定牵引架治疗股骨干骨折负重测试

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内容提要 本文报告应用测力台测试平衡固定牵引架, 治疗股骨干骨折21例患者下地时负重的动、静态力学参数。结果表明: 在骨折康复过程中从生物力学的观点看, 双拐是早期下地的一个重要力学因素。当去除牵引时, 患肢负重力恢复到66%, 这时不应该过早去掉拐杖, 仍需小夹板局部外固定。

为了衡量平衡固定牵引架治疗股骨干骨折康复的趋势, 探求早期下地的生物力学原理, 我们测试分析了21例患者下地时负重的动、静态参数, 并为临床提供了进行整体性研究的方法。

材 料

测力台的制作: 测力台面选用木制结构, 使用同等量程、灵敏度相同的4个压力传感器支持, 并由螺旋装置校准测力台面水平。为了消除患者行走过程中的心理因素, 在测力台四周构成与其同等高度的框架结构。

本组测试使用的是DPM-311A型日产电阻应变仪和国产SC16型光线示波器。

通过压力传感器、动态电阻应变仪和光线示波器组成的测力系统, 能够精确地传递和记录患者不同阶段负重过程中发出的力学信息。

方法与结果

一、静态测试: 本组测试了20例住院患者, 男性16例, 女性4例, 平均年龄40岁, 平均体重56.1kg。本组患者皆为单侧股骨干骨折, 左侧11例, 右侧9例。股骨干上1/3骨折5例, 中1/3骨折14例, 下1/3骨折1例, 其中有粉碎性骨折3例, 陈旧性骨折1例。负重期间, 使用测力台二台, 患者弃双拐, 双下肢站于其上, 每周测试1次直至去除牵引。

结果: 20例患者负重静态测试数据表明, 患者在早期下地时患肢负重力 $13.8 \pm 4.8\text{kg}$, 患肢负重是体重的25%, 当去除牵引时的患肢负

重为 $37.3 \pm 7.9\text{kg}$, 患肢负重增加到体重的66%。

二、动态测试: 受试者为股骨干中1/3骨折成年男性患者, 体重59kg。从下地第1周起, 每周测试1次至去除牵引。测试时, 让患者站在测力框架上自然地行走若干步后, 患肢和双拐分别从各自的测力台上同步通过, 每次测试重复5次, 结果见附表。

附表 患肢负重动态测试结果 (M \pm SD)

	患肢负重(kg)	双拐负重(kg)
第1周	7.32 ± 3.22	37.59 ± 15.62
第2周	11.44 ± 4.55	34.44 ± 12.52
第3周	14.87 ± 7.48	24.12 ± 10.19

患肢负重方差分析 $F=32.46$, $P<0.01$ 。

双拐负重方差分析 $F=13.46$, $P<0.01$ 。

讨 论

股骨作为一个承受压力为主的结构, 在其4个不同侧面上呈现不同的应力分布, 从而在骨的发育中以不同的几何形式及密度分布, 充分适应其生理应力的要求, 所以要使断骨愈合后完全恢复肢体正常功能, 就要适应其不同的生理应力的要求, 这种内外前后部位上不同的生理应力单靠在床上进行功能锻炼无法实现, 还要通过下床步行活动而获得, 早期下床功能锻炼对于骨髓的改造和加强是极为重要的^①。

从动态测试结果分析, 患者早期下地步履较为艰难, 依靠双拐的辅助作用, 患肢仅可负重10kg左右, 双拐分担了大部分体重, 由此使骨折处不致产生过大的支撑剪力, 骨折端移位

的倾向力被降低, 由于患肢负重并没有完全被双拐分担, 骨折端仍能产生纵向压应力, 同时腿的重量可以产生牵引力及保持长度。

这种利用自身牵引和轻微负重所产生的交变应力, 使骨折端在早期就能处于相对稳定状态, 患者能在早期无痛下自觉地进行功能锻炼, 使患肢的骨折端间能随不同的病理生理时期, 得到间断性的不同数值的生理应力刺激。由于这种刺激是靠患者作步行功能锻炼时, 凭其自身感觉在无痛情况下进行的, 因此力值是随时间而变化的, 这种生理性的应力刺激有利于骨折愈合。

由动态测试曲线看到, 在负重的活动中, 患者患肢负重力在双拐辅助下逐渐恢复, 随着患肢负重力的逐步增强而双拐的力值在同步下降。在骨折康复过程中从生物力学的观点看,

双拐在平衡固定牵引架治疗股骨干骨折能早期下地过程中, 是一个重要的力学因素。

静态负重测试结果表明, 当去除牵引时患肢的负重力并没有完全恢复, 仍需小夹板局部外固定, 不应该过早去掉拐杖。^(2,3)

临床实践和生物力学研究表明, 中西医结合的手法复位, 平衡固定牵引架的有效外固定和由于双拐辅助的早期下地活动, 使得治疗股骨干骨折临床效果满意, 符合生物力学规律。

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· 读者之音 ·

消喘膏贴敷的应用体会

根据本刊1984年第1期介绍“冬病夏治消喘膏”治疗喘息型支气管炎和支气管哮喘的经验, 本人在4年中, 曾对30多例患者临床应用, 普遍反映有较肯定的疗效。部分病人已痊愈, 大部分病人起到缓解或减轻发病的作用。其方法简便实用, 值得推广。笔者观察到局部穴位疱疹的形成是标志着贴敷成功的象征, 有疱疹必有疗效。如皮肤既无疱疹又无红肿、痛、痒, 则为无效。在具体操作上有以下几点体会。

一、四味药物(炙白芥子、元胡、细辛、甘遂)配齐后, 切忌为了快速干燥碾磨粉碎而用火烘炒, 因为一经烘炒, 将明显减少药物的效用。可在夏日阳光下曝晒, 立即用铁舟(药材店备有)碾磨粉碎, 放在棕色瓶中密闭保存备用。最好用药用油纸包用, 切忌用普通纸或塑料薄膜。

二、生姜选用个大质肥, 不用生芽干瘪者, 因当时天气炎热, 必须随用随取汁, 如隔夜调后往往会变质。姜切成片后, 用小研钵研磨取汁, 与药末调和, 以能成形略湿为宜, 做成以2~2.5cm直径的药饼, 敷于有关穴位上, 再贴上胶布固定。

三、贴敷时间: 夏季伏天应选择天气晴朗, 气温较高之日, 阴雨低温天避免施用。以上午8~9时贴敷尤佳。中午天气炎热, 尽量避免汗流夹背而使药饼变形。贴敷4~6小时后, 正好取下药膏而洗浴。个别患者当天仅可引起局部皮肤发红发痒, 次日可再加贴一次, 往往可以达到发泡的目的。

四、局部穴位上从贴敷一红痛一起疱一结痂一脱痂而露出嫩红色的皮肤, 大多数病人正好10天左右。但个别病人, 特别是大水疱型者, 脱痂往往要延长2~3天, 那就必须待脱痂后再贴敷第二次。而不必拘于10天贴敷一次, 可相应延长2~3天。

五、贴敷后的疱疹形态有两种: 一种在穴位上形成多个如米粒大的小疱疹, 略有痛痒感, 这种大多不需处理。另一种疱疹呈大水疱型, 好象用开水烫过的一样, 这种疱疹可用消毒的针刺上二个小孔, 让其渗液流出, 涂上龙胆紫, 再敷上消毒纱布。极个别病人如局部皮肤并发感染, 可适当应用抗生素。

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permeability and motility of small intestine as well as the inhibition of pepsin activity, which provided direct hemostatic effect on bleeding peptic ulcer. It elevated the plasma osmotic pressure which caused the hemostasis also. This was due to the dilution of blood. This conformed with the TCM theory—activating the blood circulation for hemostasis.

Through pharmacological study, two hemostatic active principles were isolated, which contained abundant trace elements. These were relevant to hemostasis and hematopoiesis, and it provided material evidence for hemostatic effect of rhubarb.

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Measurement of Loading Power of Femur Fracture Treated by Balanced Fixed Traction Frame

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The patients with femur fracture, who were treated by balanced fixed traction frame, could move about in early stage. In order to explore its mechanism and the tendency of femur fracture recovery, 21 patients have been measured. The measurements include dynamic and static measurement. The technique of gravity measuring platform has been used. Through the measurement, we could find that, in early stage, the loading power of fractured leg was about 10 kg. Most of the weight was undertaken by the crutches. In the early stage of moving, crutches were important for loading. When the traction was removed, the loading power of wounded leg reached 66% of normal, so it is still necessary to retain the fixation of small splint and the support of crutches.

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A Study of Dynamic State on Cold and Heat Syndromes — Observation of Characteristic between Stimulation and Reaction in Rats with Cold and Heat Functional State

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The relationship between stimulation and reaction on rats with deficiency cold(DC) and deficiency heat(DH) syndrome were studied in this paper. The animal models of cold and heat syndrome were made with cold and heat-natured products. The result was as follows: (1) Digestive system: The rats were restrained and steeped in 25°C water for 4 hours. The hemorrhagic points on gastric mucosa were counted with Guth's method. The hemorrhagic points of both groups were increased significantly than the control group ($P < 0.05$). (2) Feverish reaction: Rectal temperature was taken before and after turpentine oil injecting subcutaneously. The rectal temperature of DH rats were increased rapidly and kept on a high level, while DC rats reacted slowly, for the rectal temperature reached 38.2°C at the 7th hour after medication. (3) The change of progesterone level in serum after injecting LRH: The amount of progesterone was increased in all groups one and half hours after medication. At the 4th hour the progesterone returned a little on DH and control groups. In DC rats, the progesterone increased continually, however it was a delayed reaction. (4) The reaction of urinary 17-OHCS level after injecting ACTH: The 17-OHCS in urine was increased at the first or the second day on the control and the DH group, then normalized gradually. The DC group showed delayed reaction. (5) CNS reaction: The DC group displayed highly inhibitory in CNS. After sodium barbital injection, the anesthetic effect was rapid and lasted for a long time. The DH rats displayed excitatory state in CNS, while the anesthetic effect was slow and in short duration. In conclusion that in DC group the CNS function was inhibited, functional level of many systems was lowered and delayed, but some of them enhanced. In DH rats the CNS was excited with a high functional level. The reaction was rapid and strengthened but some of them weakened. The herbal drugs, cold and heat in nature, may regulate the reactivity to normal level.

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Pharmacological Actions of *Cordyceps sinensis*

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Cordyceps sinensis (Berk) Sacc. is one of the well-known Chinese herbal drugs. The ethanol extract of this drug (CsBN) exhibited multiple pharmacological actions in animal experiments. It lowered the total serum cholesterol (TC) level both in normal and in Triton WR 1339 induced hyperlipidemic mice. The serum triglyceride (TG) level of Triton treated mice was also decreased, but no change in TC or TG levels in liver tissue was found. The extract was shown to increase the ^{86}Rb uptake by heart in mice and to prolong the life-span of mice during hypoxia. It inhibited spontaneous motor activity, prolonged pentobarbital sleeping time and lowered body temperature in