

# 慢性肾炎及其不同证型的左心功能分析

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**内容提要** 本文分析了40例不同中医证型慢性肾炎患者的左心功能(STI及胸阻抗微分图),并与健康成年人比较,结果表明慢性肾炎患者左心功能损害以PEP/LVET、HI、心输出量在统计学处理时差异最显著。损害程度与BUN水平有关。脾肾阳虚型损害较重。

由慢性肾炎或其他肾脏疾病所致慢性肾功能衰竭、尿毒症等的肾脏损害,国内已有很多报道<sup>[1~4]</sup>,但较轻型的慢性肾炎(肾功能尚正常或仅有轻度损害,以下简称慢肾)患者的心脏功能报道不多。近年来用测量STI及胸阻抗微分图作为评价左心室功能的有效指标已为许多作者所公认。本文对我院半年多来收治的部分慢肾患者进行心脏的无创性检查,试图探讨慢肾患者左心功能情况,并从中医辨证分型角度,分析慢肾不同证型中左心功能的损害程度,以加深对慢肾各证型本质的认识。

## 对象及方法

一、对象来源:我院附属医院1983年11月至1984年7月住院及在慢肾专科门诊治疗的慢肾患者,共40例。其中男25例,女15例,年龄18~55岁,平均29.9岁。

二、中医辨证分型根据我院分型标准共分五型。

脾肾阳虚型:面色㿔白或灰黯、浮肿显著,腰以下为甚,形寒怕冷,四肢欠温,腰酸腹胀,纳呆食少,小便不利,舌质淡、舌苔薄白或白腻,脉象沉细。

脾虚湿困型:面色萎黄或苍白,肢体浮肿,身重倦怠,脘闷腹胀,大便稀溏,小便短少,舌质淡、舌体胖,边有齿痕,舌苔薄白或

白腻,脉象沉缓无力。

本文所报道病例中脾肾阳虚型10例,脾虚湿困型14例,其它三型(湿郁化热型、肝肾阴虚型、脾肾衰败型)因观察例数尚少,故暂不分析。

三、测定方法:被测者取左半卧位,用日本产RM-6000型八导生理记录仪同步记录ECG、CPT、PCG、ACG、胸阻抗图及其微分波。纸速100mm/sec。一般记录五个心动周期波形,取其平均值。

测量指标:心室收缩时间间期(STI);QS<sub>2</sub>、QS<sub>2</sub>I、LVET、LVETI、PEP、PEPI、PEP/LVET;胸阻抗(TIC)微分图;CH、QZ、HI、SV、CO;主动脉顺应性。

## 结 果

### 一、慢肾患者左心功能的一般情况

40例慢肾患者均作了STI及TIC微分图检查,其中5例因水肿较严重,影响TIC微分图检查结果不予统计外,均将所测值进行统计学处理,并与108例正常人(年龄18~45岁,平均24岁,其中男75人,女33人)进行对照,结果如附表。

从表中可见,除QS<sub>2</sub>外,其余各值经统计学处理,均有显著或非常显著差异。尤其表现在慢肾组的LVET明显缩短,PEP延长,PEP/LVET比值增大。慢肾组TIC微分图C波振幅明显减少,HI减小,因而SV、CO都显著减少。

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附表 慢肾患者与正常人的 STI 及 TIC  
微分图比较 (M±SE)

|                         | 慢肾组<br>(n=40)               | 正常对照组<br>(n=108)        | P 值    |
|-------------------------|-----------------------------|-------------------------|--------|
| QS <sub>1</sub> (ms)    | 373.57±4.93                 | 381.7±2.34              | >0.05  |
| QS <sub>2</sub> I(ms)   | 533.23±3.23                 | 524.2±1.46              | <0.05  |
| LVET(ms)                | 270.14±3.33                 | 290.3±1.60              | <0.001 |
| LVETI(ms)               | 399.07±1.90                 | 405.9±1.24              | <0.01  |
| PEP(ms)                 | 103.39±2.98                 | 92.9±1.20               | <0.01  |
| PEPI(ms)                | 133.60±2.73                 | 119.25±1.07             | <0.001 |
| PEP/LVET                | 0.384±0.011                 | 0.316±0.004             | <0.001 |
| CH(mm)                  | 20.72±1.31 <sup>*</sup>     | 30.13±0.75 <sup>△</sup> | <0.001 |
| QZ(ms)                  | 150.43±2.42 <sup>*</sup>    | 144.5±1.76 <sup>△</sup> | <0.05  |
| HI(Ω/sec <sup>2</sup> ) | 14.03±0.99 <sup>*</sup>     | 20.8±0.56 <sup>△</sup>  | <0.001 |
| SV(ml/搏)                | 49.59±2.56 <sup>*</sup>     | 78±2.41 <sup>△</sup>    | <0.001 |
| CO(ml/分)                | 3646.44±192.27 <sup>*</sup> | 5457±170.0 <sup>△</sup> | <0.001 |
| 主动脉顺应性                  | 1.137±0.093 <sup>*</sup>    | 1.85±0.077 <sup>△</sup> | <0.001 |
| HR(次/分)                 | 77.33±1.7298 <sup>*</sup>   | 68.3±1.13               | <0.001 |

\* n=35, △ n=70

主动脉顺应性也比正常人差。在40例慢肾患者中,心功异常者27例,占67.5%。

二、慢肾患者不同血压水平对左心功能的影响

将40例慢肾患者分血压正常组(舒张压≤90mmHg)和高血压组(舒张压>90mmHg),比较两组的左心功能。结果两组患者仅QS<sub>2</sub>I、PEP、PEPI、PEP/LVET及主动脉顺应性的数值有显著差异;两组分别与正常人比,LVET明显缩短,PEP延长,PEP/LVET比值显著增大。TIC微分图C波振幅减小,HI显著下降,心排量大大减少。主动脉顺应性下降。

在慢肾高血压组(舒张压范围为92~114mmHg)中,心功异常者7例,占87.5%,慢肾正常血压组心功异常者20例,占62.5%。

三、慢肾患者不同血清尿素氮(BUN)水平对左心功能的影响

将慢肾患者按BUN水平分BUN正常组(≤20mg%)及BUN增高组(>20mg%),共测19例。两组比较,PEPI、PEP/LVET、CH、HI、SV、主动脉顺应性数值经统计学处理有显著差异。

两组分别与正常人比,BUN增高组的LVET明显缩短,PEP延长,PEP/LVET显著增大;TIC微分图C波振幅显著减小,HI减小。

心排量大大减少。主动脉顺应性下降。BUN正常组除LVET缩短(指数值无明显差异),STI各值与正常无显著差异。TIC微分图C波振幅减小,HI减小,心排量下降及主动脉顺应性下降。但BUN正常组比增高组左心功能损害程度较轻。在BUN正常组,心功异常者8例,占47.1%;BUN增高组(BUN23.6~74mg%)心功异常者11例,占91.7%。

#### 四、慢肾患者不同证型左心功能情况

将慢肾患者按中医辨证分型,比较脾肾阳虚型及脾虚湿困型的左心功能,并与正常人对照。结果两组除QS<sub>2</sub>、QS<sub>2</sub>I、LVET及QZ外,其余各值经统计学处理均有显著或非常显著差异。与正常人比,脾肾阳虚组LVET明显缩短,PEP明显延长,PEP/LVET增大,HI、心排量均明显减小,主动脉顺应性差。而脾虚湿困组仅LVET缩短(STI其余各值均无统计学意义),心排量减少,主动脉顺应性下降程度比脾肾阳虚者轻。

脾肾阳虚型心功异常者10例,其中PEP/LVET≥0.40的6例,>0.36者3例;脾虚湿困型心功异常者7例,其中PEP/LVET≥0.40的仅1例,>0.36者3例。

脾肾阳虚合并高血压者3例,占30%,合并BUN增高者9例,占90%,BUN均值35.7mg%;脾虚湿困型并发高血压者3例,占21.4%,该组BUN均属正常范围,均值为14.4mg%。

## 讨 论

一、慢肾患者左心功能的一般情况及其可能的影响因素

本文观察了我院附属医院收治的慢肾患者40例,其中并发心功异常27例,占观察例数的67.5%。

慢肾患者左心功能损害主要表现在左心室射血时间(LVET)明显缩短,射血前期时间(PEP)延长,PEP/LVET增大。表明患者心脏收缩功能下降。部分患者临床虽无心功能不全症状及ECG异常,但已出现PEP/LVET增大,

可见STI测定较敏感,对发现较轻型慢肾的早期心脏并发症有一定意义。

慢肾患者TIC微分图C波(室缩波)振幅比正常人明显减小,QZ时间延长,反映心室肌收缩力及收缩速率(左室压力上升速率)下降。心输出量也明显减少。主动脉顺应性低,使主动脉容量减小,可能也是造成C波降低的部分原因。左心收缩指数明显减小,也表明心肌收缩力低下。可见虽未达较重的尿毒症期,慢肾患者并发心功损害的可能性还是较大的。这和文献的报道是一致的。

文献报道,慢肾或慢性肾衰、尿毒症等所致心脏病变的可能因素有:慢性小动脉的病理变化、高血压、氮质潴留、血清电解质紊乱、酸碱平衡失调、水肿、贫血及感染等<sup>[1,2]</sup>。本文就慢肾不同血压水平及BUN水平的左心功能进行初步分析,发现不同血压水平慢肾患者较正常人心功损害情况均有显著差异。而在不同血压水平的两组中,高血压组仅PEP/LVET增大,主动脉顺应性下降,其余心功损害情况无明显差异,这结果提示了高血压不一定是影响慢肾患者心脏损害的主要因素。这与一些作者所报道的结果不符<sup>[3]</sup>。是否因观察例数尚少或血压增高程度较轻(舒张压92~114mmHg),还有待进一步探讨。

慢肾患者BUN增高组与BUN正常组比,心功损害有很大差异,尤以STI损害较大。因STI,特别是PEP/LVET是测量左室功能早期改变的较敏感指标,BUN增高组PEP/LVET显著增高似乎提示了慢肾所致心功异常主要是由于BUN增高对心肌损害所致。

二、从慢肾患者的左心功能初步探讨中医辨证分型的本质

本文分析了两种证型慢肾患者的左心功能。脾肾阳虚10例患者均出现左心功能异常。表现在左心室射血时间缩短,射血前期时间延长,PEP/LVET增大,心输出量明显减少,主动脉顺应性明显下降等。反映心肌收缩力及收缩速率明显下降。而脾虚湿困型14例患者中发生心功异常者7例,占该型例数的50%。该型

与前者比,LVETI,PEP,PEP/LVET,CH,HI,SV,CO、主动脉顺应性等重要指标均有显著差异;而与正常人比,仅LVET稍短,经心率校正后无统计学意义。仅心输出量比正常人少,主动脉顺应性较差。可见脾虚湿困型比脾肾阳虚型慢肾患者的左心功能损害程度轻得多,STI接近正常(仅LVET缩短, $P<0.05$ )。

对照这两型患者的血压及BUN情况,其中伴高血压者各3例,分别占该型例数的30%及21.4%,似差异不大。而两型的BUN值则差异显著。脾肾阳虚组BUN增高者9例,占90%,BUN均值35.7mg%,脾虚湿困组BUN均正常,均值14.4mg%。说明两型的BUN水平明显不同,而血压水平差别不大。这与文献报道慢肾脾阳虚型高血压发生率不高(占16.6%)基本一致<sup>[4]</sup>。

本文资料显示:不同证型的慢肾患者其BUN水平及左心功能损害程度有着显著的不同。

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#### · 简 讯 ·

▲桂林市中西医结合研究会于1986年4月8日成立,并选举理事长、副理事长等14名理事。

(李焕然 吴子辉)

▲由中国中西医结合研究会河南分会举办的首届中西医结合眼科学术会议暨眼科专业学术委员会成立大会于1985年9月30日在郑州召开。

▲中国中西医结合研究会江西分会急腹症专业委员会于1986年4月25日在南昌召开了专题学术研讨会,主要议题是讨论有关复方桃仁承气汤治疗常见急腹症的科研协作问题。

(龚琼模 童劲松)

examination of gastroscopy. These cases were divided into two groups randomly. 55 cases belonged to the observation group, of which 23 patients were treated by oral therapy (alcoholic extract of *Radix Boehmeriae*, RB), 200 to 300% 10~30 ml three times everyday was given till one day after the negative conversion of stool occult blood test, while 30~60 ml of the above herbal fluid was sprayed directly to the bleeding lesion through direct vision of gastroscopy for 10 cases. The other 22 cases were given the combined oral and spray therapy. 60 cases of the control group were given intravenously the dicynonum 750 mg added to 5% glucose saline 200~500 ml once daily, and adenosin 10 mg was given intramuscularly twice a day, till one day after the stool occult blood test became negative.

The effective rate of RB group was 94.54%, the average time for the negative conversion of stool occult blood test was 2.48 days. While those of the control group were 76.66% and 4.3 days respectively, which was significantly different ( $P < 0.05$ ). The hemostatic effect of RB is satisfactory, the combined therapy is the best which may raise the efficacy. The oral and spray method may be complementary to each other; oral administration the second and the spray method the third. RB has adhesive and astringent effect, which may be its chief mechanism of hemostasis.

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### **Treatment of Chronic Renal Failure with Traditional Chinese Medicine**

#### **—Follow-up of 90 Cases**

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This paper reports the comparative observation of short term effect, the trend of disease progress and the survival period in uremic patients with plasma creatinine over 5mg%. Patients were randomly divided into two groups, group A and B, since 1981. Patients in group A were treated with "Tong Fu Xie Zhuo" (通腑泄浊, purgating to expel the wetness-evil); while in group B, patients were treated with "Bian Zheng Lun Zhi" (辨证论治, treat the patient according to syndrome differentiation) and "Wen Yang Huo Xue" (温阳活血, warm the Yang and promote the blood circulation). The treating course was three months. The effects of these two kinds of therapy were different, group A was significantly better than group B ( $P < 0.01$ ). In group A, there was marked improvement in plasma creatinine concentration and creatinine clearance ( $P < 0.01$  and 0.001 respectively).

Walser pointed out that the changes in renal function could be shown by the diagram of time and the reciprocal of creatinine concentration, which was almost on a straight line, and the slope indicated the speed of change in renal function. Six patients' data were plotted and compared with Walser's diagram. In the follow-up of 74 patients with plasma creatinine concentration over 5mg%, the one, two and three-year survival periods were 59.7%, 29.0% and 8.0% respectively. It denotes that the prognosis of chronic renal failure is really very serious.

This study emphasized the importance of "Tong Fu Xie Zhuo" in the treatment of uremia, the effect of the treatment could be better and stabler with addition of "Fu Zheng" (扶正, replenish the vitality). The discussion on the adverse effect of "Wen Yang" (温阳, warm the Yang) in the treatment of uremia indicated that this remedy should not be widely used. The application of "Tong Fu Xie Zhuo", instead of "Ping Gan Xi Feng" (平肝熄风, ease the liver and remove the wind-evil), is appropriate for the treatment of neurologic symptoms in uremia.

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### **Analysis of Left Ventricle Function in Chronic Nephritis and Its Classification According to TCM**

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Cardiac damage is one of the complications of uremia in chronic nephritis. In order to analyze the left ventricle function in mild cases of chronic nephritis, study the basis of its type differentiation in TCM and the degree of damage of left ventricle function in different types, left ventricle functions in 40 cases of chronic nephritis were determined. The average age of the cases was 29.9. RM-6000 polygraph was used to synchronously record ECG, CPT, PCG, ACG, TIC and its dz/dt.  $QS_2$ ,  $QS_1$ , LVET, LVETI, PEP, PEPI, PEP/LVET, CH, QZ, HI, SV, CO, aorta compliance, etc. were also determined. The criteria of type differentiation are those set in our college.