

· 临床研究 ·

前列腺特异性抗原体积密度在灰区前列腺癌中的鉴别诊断价值

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摘要:目的 探讨前列腺特异性抗原密度(PSAD)检测对前列腺特异抗原(PSA)灰区前列腺良恶性疾病的鉴别诊断价值。

方法 回顾该院 2008 年 4 月至 2012 年 11 月收治的疑似前列腺癌的患者 56 例,其 PSA 值均在 4~10 ng/mL。经直肠超声测定前列腺体积,化学发光法测血清 PSA 水平,经前列腺穿刺活检或术后组织病理检查证实前列腺癌患者 21 例(前列腺癌组),前列腺增生患者 35 例(前列腺增生组)。比较前列腺癌患者与前列腺增生患者组间腺体体积以及 PSAD 值的差异。**结果** 前列腺癌组与前列腺增生组比较,血清 tPSA 差异无统计学意义,前列腺体积及 PSAD 值差异有统计学意义。以前列腺癌患者前列腺体积的平均值 39.27 为参考值,设前列腺体积 40 mL 为临界点,则 80.95% 的前列腺癌患者的腺体体积小于 40 mL,68.57% 的患者腺体体积大于 40 mL,组间比较差异有统计学意义。以前列腺增生患者的平均 PSAD 值 0.147 为参考值,设 PSAD 值 0.15 为临界值,则其对前列腺体积小于 40 mL 的患者判定前列腺癌的敏感性为 80.95%,特异性为 72.73%,阳性预测值为 85%,阴性预测值为 61.54%;前列腺体积大于 40 mL 的患者,其判定前列腺癌的敏感性为 75%,特异性为 66.67%,阳性预测值为 27.27%,阴性预测值为 94.11%。**结论** PSAD 值对处于 PSA 灰区的前列腺癌有一定的鉴别诊断价值,若以 0.15 为 PSAD 的临界值,则随着前列腺体积的增大其鉴别前列腺癌的敏感性和特异性均有所降低,其影响因素尚待进一步的深入研究。

关键词: 前列腺肿瘤;前列腺增生;超声检查;前列腺特异性抗原

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The clinical significance of prostate specific antigen density value in the differential diagnosis of prostate carcinoma and benign prostate hyperplasia

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Abstract: Objective To investigate the clinical significance of prostate specific antigen density (PSAD) value in the differential diagnosis from malignant and benign prostate disease. **Methods** 56 patients who enrolled in this hospital during April 2008 to November 2012 were reviewed, all of them were suspected as prostate carcinoma with free total PSA value at 4-10 ng/mL. Prostate volume were determined via transrectal ultrasound, while serum PSA was determined by chemiluminescence method, and all patients were finally pathologically diagnosed via tissue biopsy or prostatectomy. 21 cases were proved to be prostate carcinoma (prostate carcinoma group), and the other 35 cases were proved to be benign prostate hyperplasia (BPH). And the statistical significances of tPSA, prostate volume and PSAD values were compared between the two groups. **Results** Compared with BPH group, serum level of tPSA was insignificant, while the values of prostate volume and PSAD were significantly lower in the BPH group than in prostate carcinoma group. Considering the mean prostate volume (39.27 mL) as the reference point, 40 mL was set as the cut-off value of prostate volume. Therefore, there were 80.95% prostate carcinoma group patients whose prostate volume were less than 40 mL, and 68.57% benign prostate hyperplasia group patients whose prostate volume were larger than 40 mL. Considering the PSAD value (0.147) as the reference point, 0.15 was set as the cut-off value of PSAD. Therefore, the sensitivity, specificity, positive predictive value and negative predictive value among patients with prostate volume less than 40 mL, the data were respectively as 80.95%, 72.73%, 85% and 61.54%. While, among patients with prostate volume larger than 40 mL, were respectively as 75%, 66.67%, 27.27% and 94.11%. **Conclusion** PSAD was of certain value in the differential diagnosis of prostate carcinoma in PSA gray zone cases. If PSAD=0.15 was consider as the cut-off point, the sensitivity and specificity of differential diagnosis for prostate carcinoma decreased as the prostate volume increase. However, the influencing factors are still to be elucidated.

Key words: prostatic neoplasms; benign prostate hyperplasia; ultrasonography; prostate-specific antigen

前列腺癌是男性泌尿生殖系统的主要恶性肿瘤之一,其发病率仅次于肺癌,血清总的前列腺特异性抗原(total prostate specific antigen, tPSA)测定是临床上诊断前列腺癌的重要生化指标,但其临床特异性又受多种因素的影响,当 tPSA 值在 4~10 ng/mL 时被称为前列腺灰区,其诊断前列腺癌的特异性更低。本研究旨在探讨前列腺特异性抗原密度(prostate spe-

cific antigen density, PSAD)测定对 PSA 灰区前列腺癌的鉴别诊断价值。

1 资料与方法

1.1 一般资料 选取 2008 年 4 月至 2012 年 11 月间本院收治的疑似前列腺癌的患者 56 例,其 PSA 值均在 4~10 ng/mL。其中前列腺癌患者 21 例(前列腺癌组),年龄 61~78

岁,平均(67.5±8.4)岁;前列腺增生患者 35 例(前列腺增生组),年龄 56~77 岁,平均(65.3±7.7)岁。患者全部均经前列腺穿刺活检或术后病理证实。

1.2 方法

1.2.1 前列腺体积测量 采用美国 GE LOGIQ-P5 彩色多普勒超声诊断仪,经直肠腔内探头,频率为 5.0~10.0 MHz,经直肠扫查前列腺,观察前列腺大小、形态、回声等情况,同时测量前列腺前后径、左右径、上下径,计算前列腺体积。前列腺体积=(前后径×左右径×上下径)× $\pi/6$ 。

1.2.2 PSAD 计算 采集空腹静脉全血 2 mL,离心后取血清,采用化学发光法测定患者 tPSA 水平。PSAD=tPSA/前列腺体积。

1.3 统计学处理 采用 SPSS15.0 软件进行数据分析,采用非参数法构建 ROC 曲线,并以约登指数最大切点为临界点,以确定前列腺体积和 PSAD 值判定前列腺癌的临床值;计数资料以例(%)表示,组间比较采用 χ^2 检验,计量资料以 $\bar{x}\pm s$ 表示,组间比较采用 *t* 检验,以 $P<0.05$ 为差异具有统计学意义。

2 结果

2.1 前列腺癌和前列腺增生患者 tPSA 值、前列腺体积及 PSAD 值间的差异 对比确诊的 21 例前列腺癌和 35 例前列腺增生患者的年龄、tPSA 值,组间差异无统计学意义,而前列腺体积和 PSAD 值组间比较差异有统计学意义,见表 1。

表 1 两组患者 tPSA 值、前列腺体积及 PSAD 值比较($\bar{x}\pm s$)

组别	<i>n</i>	年龄 (岁)	前列腺体积 (mL)	tPSA (ng/mL)	PSAD (ng/mL)
前列腺癌组	21	67.5±8.4	39.27±3.89	6.55±1.13	0.193±0.037
前列腺增生组	35	65.3±7.7	44.79±4.99	6.69±1.08	0.147±0.017
<i>P</i>	—	>0.05	<0.05	>0.05	<0.05

—:此项无数据。

2.2 PSA 灰区前列腺癌及前列腺增生患者间的前列腺体积差异比较 本组患者均表现出不同程度的前列腺增生,其中前列腺癌组的前列腺体积中位数是 39.27 mL,前列腺增生组的前列腺体积中位数是 44.79 mL,以前列腺体积 40 mL 作为中位数,前列腺癌组中前列腺体积大于 40 mL 者 17 例(80.95%),前列腺体积小于 40 mL 者 4 例(19.04%);前列腺增生患者中前列腺体积大于 40 mL 者 11 例(31.42%),前列腺体积小于 40 mL 者 24 例(68.57%),组间比较差异有统计学意义($P<0.05$)。

2.3 PSA 灰区两组患者 PSAD 值的差异比较 本组研究资料中,前列腺癌组的 PSAD 值的中位数是 0.193,前列腺增生组的 PSAD 值的中位数是 0.147,经受试者曲线分析求得 PSAD 值等于 0.15 为临界值,对前列腺体积小于 40 mL 的患者,其判定前列腺癌的敏感性为 80.95%,特异性为 72.73%,阳性预测值为 85%,阴性预测值为 61.54%。当 PSAD 值为 0.15 时,对前列腺体积大于 40 mL 的患者,其判定前列腺癌的敏感性为 75.00%,特异性为 66.67%,阳性预测值为 27.27%,阴性预测值为 94.11%。

3 讨论

PSA 是参与精液液化作用的一种单链糖蛋白,由前列腺腺泡上皮和前列腺导管上皮细胞产生^[1],主要储存于精液中。

但当前列腺出现炎症、增生,尤其是患有前列腺癌的情况下,前列腺腺泡上皮及导管上皮与毛细血管间的屏障便会被破坏,导致血清 PSA 浓度上升。PSA 作为肿瘤标志物,已成为鉴别前列腺癌的重要血清指标。研究证实血清 tPSA 浓度与前列腺体积有关,有学者^[2]发现列腺增生或癌组织每增加 1 g,血清 tPSA 即相应升高 0.3 ng/mL 和 3.5 ng/mL。因此提出将 PSAD 作为提高前列腺癌鉴别诊断的辅助指标,尤其患者在直肠指诊和经直肠超声检查为阴性时。前列腺增生患者的 PSA 会在一定范围内产生波动,前列腺癌细胞分泌较多 tPSA 进入血液循环,相同浓度 tPSA 时 PSAD 越高,患癌的可能性越大。如果 PSA 经前列腺体积校正后仍显示异常升高则提示前列腺癌的发生,因此 PSAD 的异常升高可以作为前列腺癌的特异性指标^[3-6]。众多学者研究并比较了一组前列腺癌与前列腺增生患者的 PSAD,发现二者差异有统计学意义,PSAD 有助于鉴别 tPSA>4 ng/mL 的可疑患者,认为 PSAD 是一种较 tPSA 更有价值的预测指标,并提出若 PSAD>0.15 时,应考虑前列腺癌的可能^[7-10]。临床应用 PSA 经验表明,前列腺癌患者的血清 PSA 显著高于前列腺增生患者,PSA 高水平者中前列腺癌患者比例显著高于前列腺增生患者,但由于前列腺增生发病率远高于前列腺癌,PSA 误诊率为 30%~70%^[11-12]。本研究着重探讨了 PSAD 值对 PSA 诊断灰区患者的鉴别诊断价值。结果表明,本组病例中前列腺癌与前列腺增生患者的 tPSA 组间比较差异无统计学意义,前列腺腺体的体积及 PSAD 值组间比较差异有统计学意义($P<0.05$)。若设 PSAD 的临界值为 0.15,则对前列腺体积小于 40 mL 的患者,其判定前列腺癌的敏感性为 80.95%,特异性为 72.73%,阳性预测值为 85.00%,阴性预测值为 61.54%;对前列腺体积大于 40 mL 的患者,其判定前列腺癌的敏感性为 75.00%,特异性为 66.67%,阳性预测值为 27.27%,阴性预测值为 94.11%。说明对处于 PSA 灰区的患者,若以 0.15 为 PSAD 的临界值,则随着前列腺体积的增大,其判定前列腺癌的敏感性、特异性以及阳性预测值均有下降。而 Saema 等^[12]报道,对于直肠指诊阴性同时处于 PSA 诊断灰区的患者,将 PSAD 的临界值设为 0.15 虽是可靠的,但其敏感性仅为 12.50%,特异性也仅为 61.10%,并提出 PSAD 值不能有效地鉴别良恶性前列腺疾病。有文献报道,PSAD 值对处于 PSA 灰区的患者的鉴别诊断与血清 PSA 值比较并未体现出优势^[13-15]。本研究的结果虽然与上述报道有某些相似之处,但由于患者前列腺体积、年龄的差异以及是否服用过治疗前列腺增生的药物和近期是否有过前列腺活检等都可能影响 tPSA 水平和 PSAD 值准确性的因素,因此将 PSAD 值应用于 PSA 诊断灰区的患者,其对前列腺良恶性疾病的鉴别诊断价值有待进一步的探讨。

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