

門脈高壓病人之門靜脈脈波動(pulsatility)與譜寬(spectral width)變化，與肝臟疾病嚴重程度有相關性

M Barakat, Portal vein pulsatility and spectral width changes in patients with portal hypertension: relation to the severity of liver disease. The British Journal of Radiology, 2002; 75: 417-421.
Department of Tropical Medicine and Gastroenterology, Faculty of Medicine, Assiut University, Assiut, Egypt

林俊麟醫師 / 國泰綜合醫院 肝臟中心

摘要：

本研究使用都普勒超音波之門靜脈脈波動(pulsatility)與譜寬(spectral width)變化，來評估慢性肝臟疾病與門脈高壓嚴重程度之相關性。肝臟疾病嚴重度以 Child-Pugh score 決定。門靜脈脈波動指數 (pulsatility index, PI) 之計算為最高血流速減最低血流速，再除以最高血流速 [$PI = (\text{peak maximum velocity} - \text{peak minimum velocity}) / \text{peak maximum velocity}$]。譜寬指數 (spectral width index, SWI) 之計算為同一點之門靜脈頻寬最高血流速減頻寬最低血流速，再除以最高血流速 [$SWI = (\text{peak maximum velocity at the wave envelope} - \text{minimum velocity at the wave base vertically below the point of peak maximum velocity}) / \text{peak maximum velocity}$]。與健康受試者相較之下，慢性肝臟疾病患者 PI 顯著較低 (0.39 ± 0.1 vs 0.23 ± 0.08 , $p < 0.001$)，Child-Pugh C 病患之 PI，顯著低於 Child-Pugh A 病患 (0.21 ± 0.07 vs 0.25 ± 0.08 , $p < 0.05$)。慢

性肝臟疾病患者之 SWI 顯著高於健康受試者 (0.91 ± 0.16 vs 0.60 ± 0.12 , $p < 0.001$)。早期慢性肝臟疾病 Child-Pugh A 患者之 SWI，亦高於與健康受試者。

結論：

PI 與 SWI 可以反應出慢性肝臟疾病患者之早期血液動力學變化。這些變化會隨著肝臟疾病惡化而更加明顯。

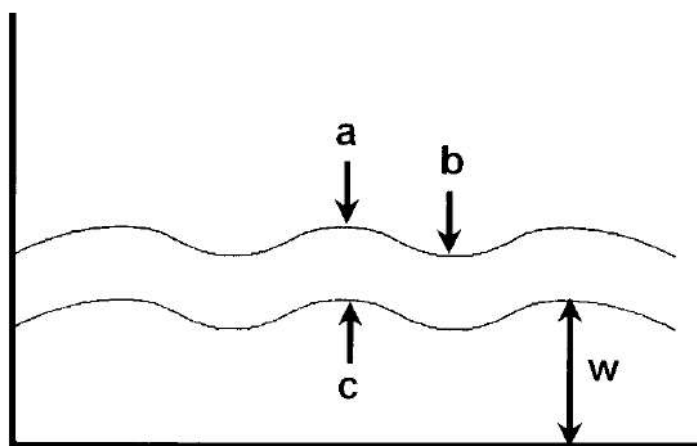


Figure 1. Simplified representation of a portal vein flow waveform as seen on spectral Doppler display. a, maximum peak velocity at the wave envelope; b, minimum peak velocity; c, minimum velocity at the wave base; w, window area underneath the flow wave.

$$\text{Pulsatility index (PI)} = (a - b) / a$$

$$\text{Spectral width index (SWI)} = (a - c) / a$$