

國立臺灣大學技術行銷表

臺大案號: 13A-100210

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產品/技術名稱	非侵入性血管壁厚度與硬度之檢測方法
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產品/技術說明	提供一種安全、快速、非侵入性的血管壁檢測方法，利用超音波收集連續動脈縱切影像與動脈收縮壓與舒張壓數值，透過動脈影像邊緣提取技術以及統計原理，動態分析人體動脈血管硬度與內膜-中層厚度，並在動物侵入式實驗中驗證檢測的準確性，其可應用於心血管相關疾病與新陳代謝異常病人之檢測與藥物療效的佐證。
應用範圍	心血管疾病、高血壓、糖尿病、肥胖等會導致血管壁的厚度與硬度增加，而提高腦中風與心肌梗塞的發病機會，臨床上必須藉由血檢或其他複雜的檢測儀器協助進行診斷，本方式可直接量測出頸動脈血管壁的厚度與硬度，提供臨床醫師作為疾病治療與控制的參考及依據。
產品/技術優勢	血管壁厚度之檢測目前大部分超音波儀均有此功能，但其檢測方法僅限於使用一張 2-D 影像進行量測，致其應用價值不大，而臨床上有關血管疾病檢測之簡易檢查方式目前只有血壓量測一途。本檢測方法利用超音波 90 張 連續血管壁動畫影像 以及血壓量測的收縮壓與舒張壓值一起進行分析，對於血管壁厚度硬度變化之量測有高度準確性，為目前所有檢測方式無法相比，在臨床上有高度應用價值。
市場潛力	檢測頸動脈的厚度硬度可推測全身血管的生理病理狀態。本專利的血管壁厚度硬度檢測方法以非侵入方式檢測分析後可立即得知血管壁的資料。臨床上可用的非侵入式即時檢測方式只有血壓量測，但由於降血壓藥的使用，平時無法得知血管壁的真实狀況。在一般健檢時利用此方式可快速得知血管壁厚度硬度的資訊，以供醫師作為疾病篩選、診斷與治療的依據，在心臟內外科、神經內外科有實際的應用價值。目前已有超音波廠商與我們討論如何推廣應用到一般健檢，相信有很大的醫療與健檢市場的經濟價值。
產品/技術 智財權保護方式	非侵入性血管材料硬度的檢測方式.邵耀華,包舜華,徐久忠*,王崇禮. 中華民國專利.證書號數:發明第 I317631 號.公告日:中華民國 98 年 12 月 01 日.專利期間:2009 年 12 月 01 日至 2026 年 10 月 26 日

Marketing Abstract of NTU's Invention Disclosure

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Title	The examination of vascular thickness and stiffness with non-invasive method
Inventor (s)	Yio-Wha Shau, Sun-Hua Pao, Jeou-Jong Shyu, Chung-Li Wang
Brief Description	To examine the thickness and stiffness of vascular wall, a non- invasive method was developed with ultrasonography. The serial longitudinal image of vascular wall was collected thru ultrasound, and the data of systolic and diastolic pressure were collected at same time. With the area tracking technique of vascular wall, the stiffness and intima-media thickness of the human vascular wall can be analyzed dynamically. The accuracy also has been identified in the invasive animal study. This technique can be applied to examine the patients with cardio-vascular or metabolic disease. The therapeutic effect of medicine also can be used to identify.
Fields of Application	During the conditions of cardio-vascular disease, hypertension, diabetes mellitus, and obesity the thickness and stiffness of vascular wall will increase, which cause high risk of stroke and cardiac infarction. In clinics the blood test or other complicated instruments have to be used for the diagnosis. With this non-invasive method, the thickness and stiffness of carotid artery can be measured directly. This information can be used for the reference of disease control in clinics.
Advantages	The vascular thickness of blood vessel can be measured in most modern ultrasound. Because only one 2D image is used for this measurement, the clinical application seems to be difficult. The only simple way for vascular disease examination is the measurement of blood pressure in clinics. With 90 serial dynamic ultrasound images and systolic-diastolic pressure, the thickness and stiffness of vascular wall can be measured with accuracy. This non-invasive method has high application in clinics, and there is no other examination can be competing with this new method.
Market Potential	From the examination of thickness and stiffness of carotid artery, the physiologic-pathological condition of blood vessel can be speculated non-invasively. The only non-invasive method to examine blood vessel is the measurement of blood pressure in clinics. However, after medicine taking the blood pressure will back to normal with nothing change of vascular lesion. During routine health examination, this method can supply the information of vascular thickness and stiffness, which can be used for disease screening, diagnosis, and the therapeutic basis in the clinics of cardiology and neurology. It also has the practical economic price on the market of health examination.
IP Right(s)	TW Patent No. I317631