• 系統編號	RB8501-1227
• 計畫中文名稱	斜視病人顳側及鼻側視路視誘發電位之研究 ：以最長序列信號處理
• 計畫英文名稱	M-Sequence Signal Processing to Simultaneously Record and Separate the Visual Evoked Potential (VEP) of Temporal and Nasal Visual Path.
• 主管機關	行政院國家科學委員會
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• 研究人員	王藹侯 Wang, Ai-Hou
• 中文關鍵字	雙眼視覺；視覺誘發電位；最長序列信號處理；腦波圖；視動眼震
• 英文關鍵字	Binocular vision；Visual evoked potential；Pseudorandom maximal sequence；Electroencephalogram；Optokinetic nystagmus
• 中文摘要	目前臨床使用之視誘發電位係雙眼分別記錄,於是雙眼視如融像、立體視、雙眼競爭、雙眼壓制均無法表現出來。交替性斜視病人單眼視力正常,視誘發電位也正常,他們雙眼視的缺失,無法以傳統視誘發電位記錄得到。最長序列是一種數位式信號處理方式,它處理多輸入、單輸出的系統,能夠將對各別輸入的反應分離開來。我們使用最長序列的方法同時記錄雙眼視誘發電位並將它們分別抽取出來,得到一些雙眼視的訊息。 結果:(1)在雙眼視正常的人,兩眼同時記錄視誘發電位輻度爲遮蓋任一眼記錄所得之一半,而雙眼視不正常的人無此現象。(2)以四種大小西洋棋盤作爲刺激器,最長序列方法記錄的視誘發電位和傳統視誘發電位的波形及潛期相類似,雖然透過紅、綠鏡,前者的亮僅及後者的六分之一。 結論:(1)此一系統可以成功地同時記錄及分離雙眼視誘發電位;(2)雙眼間的交互作用,可以由比較雙眼同時記錄和遮蓋一眼記錄得到;(3)對受試者和記錄者而言,最長序列的記錄方式及結果都涵蓋傳統視誘發電位。我們建議臨床應用上,前者可以取代後者。
• 英文摘要	Visual evoked potential (VEP) is a standard clinical tool to evaluate the overall integrity of visual pathway. Conventional VEP records right and left eye individually and can not assess binocular status of the patients. M-sequence (Maximal sequence) is a digital signal processing algorithm which handles multiple inputs, single output system and separates isolated response to individual input. We designed anaglyphical checkerboard reversal with personal computer. Red checkerboard reversed following one M-sequence and green checkerboard following another M-sequence. After amplification, the electroencephalogram (EEG) was transferred to second

personal computer and processed according to M-sequence algorithm to get VEP from either eye. For binocular normal subjects, VEPs under binocular viewing condition got half amplitude as compared with those under monocular viewing condition. It was not for binocular deficient subjects. M-sequence VEPs of 4 checker sizes had similar waveforms and latencies as conventional VEPs despite the stimulator luminance was only 1/6 for the former. In conclusion, (1) This system could successfully record separate VEPs of two eyes. (2) We got binocular status by comparing M-sequence VEPs under binocular and monocular viewing conditions. (3) The test procedures and acquired informations of M-sequence VEP covered and were superior to those of conventional VEP. We suggest to substitute the latter with the former.