

coincidence rate was 92.72%-94.79%. The sensitivity and specificity values of ELISA proposed by the manufacturer for clinical diagnosis RA were 82% and 95%. The two methods had the same detection effect.

Conclusion: The current commercially available methods for detecting anti-CCP antibodies were roughly the same, and the consistency between LETIA and ELISA were high. In general, the LETIA was more accurate and sensitive than the ELISA in the detection of anti-CCP antibodies in serum. Overall diagnostic performance of LETIA can be compared. LETIA provided reliable information about antibody levels that made it useful in monitoring disease activity. Comparable to the classic ELISA, ELISA may even be replaced in the future.

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AB1336B

PERFORMANCE EVALUATION OF PARTICLE-ENHANCED TURBIDIMETRIC IMMUNOASSAY FOR ANTINUCLEAR ANTIBODIES DETECTION IN COMPARISON WITH LINE IMMUNOASSAY

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Background: Detection of antinuclear antibodies (ANAs) supports the clinical diagnosis of ANA-associated rheumatic diseases, such as systemic sclerosis (SSc), systemic lupus erythematosus (SLE), primary Sjogren's syndrome (SjS) and mixed connective tissue disease (MCTD) [1-3]. Throughout history, a number of autoantibody detection methods have emerged, for instance, indirect immunofluorescence (IIF), radioimmunoassay (RIA), enzyme-linked immunosorbent assay (ELISA) and line immunoassay (LIA) [4]. With the development of detection technology, new methods to detect ANAs were continuously developed by numerous manufacturers, for example, particle-enhanced turbidimetric immunoassay (PETIA). Therefore, in the current study, we evaluated for the first time the performance of PETIA in the detection of anti-nuclear antibody and compared it with commercial LIA.

Objectives: To evaluate the clinical performance of PETIA for the detection of ANAs in comparison to the currently commonly used LIA.

Methods: Total 606 serum samples from diseased and healthy controls were assayed to simultaneously determine SSA, Sm/RNP, SSB, Sm and U1-SnRNP antibodies by the PETIA and LIA. The sensitivity, specificity, consistency and area under curve (AUC) were analyzed for each antibody between PETIA and LIA.

Results: The positive rate and specificity of PETIA and LIA for ANA specific target antibodies were comparable. Compared with LIA, the sensitivity of SSA, SSB and Sm were 100.00%, 88.89% and 90.00%, while Sm/RNP and U1-SnRNP were 75.00%, 70.59%, respectively; Sm/RNP, SSB, Sm and U1-SnRNP have high specificity, respectively 97.87%, 98.90%, 97.80% and 94.68%, while SSA specificity is general, 81.52%. Under manufacturer's cut-off values, the consistent rates of SSA, Sm/RNP, SSB, Sm, and U1-SnRNP between PETIA and LIA were 87.22% (116/133), 92.06% (116/126), 96.61% (114/118), 97.03% (98/101) and 88.28 (113/128), respectively. Excellent consistencies were found between PETIA and LIA for the detection of Sm/RNP, SSB and Sm antibodies ($\kappa > 0.75$), and kappa coefficients were 0.776 ($p < 0.001$), 0.901 ($p < 0.001$) and 0.841 ($p < 0.001$), while the coincidence for anti-SSA and U1-SnRNP detection were moderate ($0.40 < \kappa < 0.75$), and Kappa coefficient was 0.731 ($p < 0.001$) and 0.685 ($p < 0.001$), respectively.

Conclusion: The performance of PETIA for the detection of antibodies to nuclear specific antigen was satisfying to correlate with that of LIA. With the additional benefits of short detection time, quantitative output and high universality. PETIA can better meet the requirements of quantitative detection of specific target antibodies.

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Rehabilitation

AB1336C

COMPARISON OF NORMALIZED MUSCLE ACTIVATION EFFECTS OF THREE DIFFERENT EXERCISES ON SUPRAHYOID MUSCLES IN HEALTHY SUBJECTS

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Background: The most important airway protection mechanism during swallowing is adequate laryngeal elevation. Suprahyoid muscles are responsible for laryngeal elevation. There are many treatment approaches to improve laryngeal elevation in swallowing rehabilitation. The most common methods are exercises including Shaker exercises, Chin-Tuck Against Resistance (CTAR) exercise, Neuromuscular Electrical Stimulation of suprahyoid muscles and Expiratory Muscle Strength Training (1-4).

Objectives: The aim of our study was to compare the effects of three different exercises including Shaker, CTAR and a new method Chin Tuck with TheraBand Exercises on suprahyoid muscles activity.

Methods: Forty-two healthy subjects with a mean age of 27.92 ± 5.02 years ($\text{min}=18$, $\text{max}=40$), of which 50% were male were included. All individuals were divided into three groups; Chin Tuck Against Resistance (CTAR); Group 1, Shaker exercise; Group 2, Chin Tuck Exercise with Theraband; Group 3, with computerized randomization. Surface EMG evaluation was performed to determine electrical activity of the suprahyoid muscles during maximal voluntary isometric contraction (Figure1) and during performing CTAR, Shaker exercise and Chin Tuck with Theraband (Figure 2-4). Normalized suprahyoid muscle activations were calculated as: Recorded Maximum Electrical Activity During Exercise (mV)/ Recorded Maximum Electrical Activity During Maximum Isometric Contraction (mV).

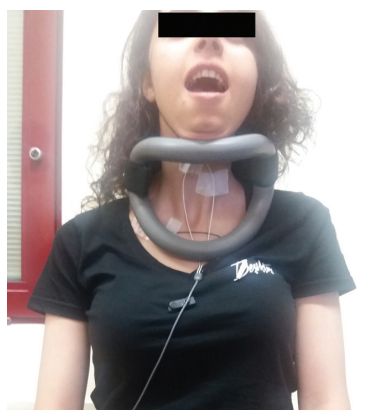


Figure 1. Evaluation of Maximum Isometric Suprahyoid Muscle Activity

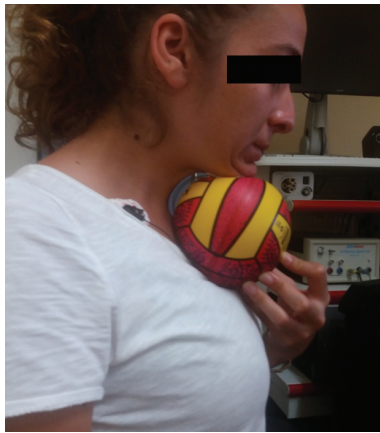


Figure 2. Chin Tuck Against Resistance Exercise (CTAR)



Figure 3. Shaker Exercise



Figure 4. Chin Tuck Exercise with Theraband

Results: A statistically significant difference was found between three groups in terms of normalized suprahyoid muscle activity ($p < 0.001$) (Table 1). The difference between three groups was caused by the difference between Group 1 and Group 2 ($p < 0.001$) and between Group 1 and Group 3 ($p = 0.040$) in favor of Group 1. No difference was found between Group 2 and Group 3 ($p = 0.104$) (Table 2-4).

Table 1. Comparison of Normalized Suprahyoid Muscle Activation between groups

	Group 1 (n:14)	Group 2 (n:14)	Group 3 (n:14)	X ²	p
	Mean ±SD	Mean ±SD	Mean ±SD		
Normalized Suprahyoid Muscle activation (%)	0.791 ±0.380	0.306 ±0.116	0.472 ±0.284	15.760	* < 0.001

* $p < 0.05$

Table 2. Comparison of Normalized Suprahyoid Muscle Activation between Group 1 and Group 2

	Group 1 (n:14)	Group 2 (n:14)	p
	Mean±SD	Mean±SD	
Normalized Suprahyoid Muscle activation (%)	0.791 ±0.380	0.306 ±0.116	* < 0.001

* $p < 0.05$

Table 4. Comparison of Normalized Suprahyoid Muscle Activations of Group 2 and Group 3

	Group 1 (n:14)	Group 3 (n:14)	p
	Mean±SD	Mean±SD	
Normalized Suprahyoid Muscle activation (%)	0.791 ±0.380	0.472 ±0.284	* 0.040

* $p < 0.05$

Table 5. Comparison of Normalized Suprahyoid Muscle Activations of Group 2 and Group 3

	Group 2 (n:14)	Group 3 (n:14)	p
	Mean±SD	Mean±SD	
Normalized Suprahyoid Muscle activation (%)	0.306 ±0.116	0.472 ±0.284	0.107

* $p < 0.05$

Conclusion: In conclusion, primarily CTAR exercise should be included in rehabilitation to increase the suprahyoid muscle activation. In addition, chin tuck exercise with Therband can also be considered as an alternative to CTAR.

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Education

AB1337 **A VIRTUAL BIOLOGIC PATHWAY TO IMPROVE CARE STANDARD, REDUCE TREATMENT DELAYS AND IMPROVE COST EFFICIENCY - THE WHIPPS CROSS VIRTUAL BIOLOGIC CLINIC EXPERIENCE**

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Background Biologic therapies have become standardised as best practice for treatment of Rheumatoid Arthritis (RA), Psoriatic Arthritis (PsA) and Axial Spondyloarthropathies (AS) in the UK. There are more stringent criteria for access versus Europe and the USA. There is no agreed mechanism to choose a specific agent over and above locally agreed criteria that are disease specific. Most UK rheumatologists make an individual decision based on personal experience and guidelines as well as evidence. There are cost implications and inherent delays within locally agreed pathways that involve a pharmacist and a patient education process that may be nurse led. The overall process to initiate this treatment takes months. To this end a weekly one hour Virtual Biologic Clinic (VBC) has been set up: attended by the multi-disciplinary team of all consultants, clinical and research nurse specialists, lead pharmacist and an administrator.

Objectives We compared waiting time for biologic initiation before and after the VBC, assessed numbers whose treatment plan was altered and we attempted a cost analysis.

Methods All patients with RA, PsA, AS and a relevant connective tissue disease (CTD) attending VBC between Nov 2017 and Jun 2018 were included in this retrospective observation. All patients starting a biologic therapy one year earlier (Nov 2016-17) were compared. The time between decision to treat and prescription receipt by delivery company/day unit (for IV admin) was measured (by Mann-