Evaluation of Rheumatology Nurse led Clinic in Managing Patients with Rheumatoid Arthritis: A Retrospective Study

HA Convention
Oral Presentation
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NTEC, PWH, M&T, APN
Introduction

- Rheumatoid arthritis (RA): chronic, systemic, inflammatory, autoimmune disease associated with swelling and pain in multiple joints

- Affecting 0.5-1.0% of the population worldwide and 0.35% in Hong Kong
Introduction

- RA had negative impact on individual’s physical, social and psychological functioning
  - Physical impact: pain and stiffness
  - Psychological impact: depression
- Decrease quality of life
- Reduce life expectancy
- Co-morbidities such as osteoporosis, interstitial lung disease, infection, pericarditis etc
# RA Classification

The 2010 American College of Rheumatology/European League Against Rheumatism classification criteria for rheumatoid arthritis

<table>
<thead>
<tr>
<th>Score</th>
<th>Target Population (Who should be tested?): Patients who</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1) have at least 1 joint with <strong>definite clinical synovitis (swelling)</strong>*</td>
</tr>
<tr>
<td></td>
<td>2) with the synovitis not better explained by another disease †</td>
</tr>
</tbody>
</table>

Classification criteria for RA (score-based algorithm: add score of categories A-D; a score of ≥6/10 is needed for classification of a patient as having definite RA ‡)

### A. Joint involvement §

<table>
<thead>
<tr>
<th>Score</th>
<th>1 large joint †</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>2-10 large joints</td>
</tr>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>1-3 small joints (with or without involvement of large joints) **</td>
</tr>
<tr>
<td></td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>4-10 small joints (with or without involvement of large joints)</td>
</tr>
<tr>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>&gt;10 joints (at least 1 small joint) ‡‡</td>
</tr>
<tr>
<td></td>
<td>5</td>
</tr>
</tbody>
</table>

### B. Serology (at least 1 test result is needed for classification) ‡‡

<table>
<thead>
<tr>
<th>Score</th>
<th>Negative RF or low-positive ACPA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Low-positive RF or low-positive ACPA</td>
</tr>
<tr>
<td></td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>High-positive RF or high-positive ACPA</td>
</tr>
<tr>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

### C. Acute-phase reactants (at least 1 test result is needed for classification) ‡‡‡

<table>
<thead>
<tr>
<th>Score</th>
<th>Normal CRP and normal ESR</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Abnormal CRP or abnormal ESR</td>
</tr>
<tr>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>

### D. Duration of symptoms ‡‡‡

<table>
<thead>
<tr>
<th>Score</th>
<th>&lt;6 weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>≥6 weeks</td>
</tr>
<tr>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>
Assessment of disease activity

DAS28 (ESR) = 0.56 \sqrt{(TEN28)} + 0.28 \sqrt{SW28} + 0.70\ln(ESR) + 0.014 (GH)

DAS28 (CRP) = 0.56 \times \sqrt{(TEN28)} + 0.28 \times \sqrt{(SW28)} + 0.36\times\ln(CRP+1) + 0.014 (GH) + 0.96

TEN28  28 joints of tenderness  
SW28   28 joints of swelling  
ESR    Erythrocyte Sedimentation Rate  
CRP    C- Reactive Protein  
GH     Patient’s Global Assessment of disease activity of 100mm
Introduction

According to NICE guideline (2009), DAS28 was a widely used and endorsed in disease activity.

<table>
<thead>
<tr>
<th>DAS28</th>
<th>Remission</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 2.6</td>
<td>Remission</td>
</tr>
<tr>
<td>≤ 3.2</td>
<td>Well-controlled disease</td>
</tr>
<tr>
<td>&gt; 3.2 to ≤ 5.1</td>
<td>Moderate disease</td>
</tr>
<tr>
<td>&gt; 5.1</td>
<td>Active disease</td>
</tr>
</tbody>
</table>
Introduction

• Multidisciplinary team approach with rheumatology nurse was recommended to undertake the extended roles

• Effectiveness of nurse led care in other chronic diseases such as diabetes, coronary heart disease and chronic obstructive pulmonary disease

• Nurse-led care has significant value in holistic care to patients.
EULAR recommendation for the role of nurse

- Patient education
- Disease and drug monitoring
- Telephone helpline
- Comprehensive disease management
- Promote self management skills to have greater empowerment and self efficacy
- Cost saving
Introduction

• Management of RA patients are usually provided by rheumatologists only.
• Enhanced care provided by rheumatology nurses between rheumatologist consultations may have beneficial effects in terms of symptom control.
• In Hong Kong, whether rheumatology nurse care model can lead to favorable patient outcomes remained uncertain.
Objectives

• To examine the clinical effectiveness of rheumatology nurse led clinic in controlling disease activity as expressed in change of Disease Activity Score in 28 joints (DAS28) in RA patients compared with usual care led by rheumatologists only.
Method

• This was a retrospective study.
• Two historical groups of RA patients (30 patients at each group) were identified from attendance records between 1/1/2015 and 20/7/2015 at the rheumatology outpatient clinics of a regional hospital.
• Primary outcomes were the changes in disease activity (DAS28) at follow-up visit after the doctor clinic and nurse clinic.
Method

• **Nurse clinic group**: comprised of patients who attended rheumatology nurse clinic in between the customary doctor clinic consultations.

  ➢ **Patient education**: included disease mechanism, assessment of disease activity, medication adherence was checked and the importance of medication adherence was reinforced. RA treatment could also be intensified if needed.

• **Doctor’s clinic group**: comprised of patients managed by rheumatologists only
<table>
<thead>
<tr>
<th>Clinic Group</th>
<th>Records Reviewed</th>
<th>Rheumatoid Arthritis</th>
<th>RA Patients Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doctor’s clinic group</td>
<td>896</td>
<td>499</td>
<td>56%</td>
</tr>
<tr>
<td>Nurse-led clinic group</td>
<td>105</td>
<td>79</td>
<td>75%</td>
</tr>
</tbody>
</table>

Total: 1001 records reviewed
baseline characteristic

28 (ESR) 4.532±1.14
Result

• Both group are around their 50s
• Female number are greater that male (66-87%)
• Body weight are similar (~ less than 60Kg)
• Most of them were lived with family (83-100%)
Result

• They have comorbidities, e.g. hypertension (n=12 in nurse clinic, n= 10 in Dr clinic group)
• Few of them have extra-articular features
  – C1/C2 subluxation (n=1)
  – Carpal tunnel syndrome (n=1)
  – Pulmonary fibrosis (n= 1)
• However, nearly half of them have erosion on their x-rays e.g. hands and wrists stated in the radiological report / consultation notes.
• Most of them are using DMARDs (oral medication) in treating rheumatoid arthritis
Result

• Follow up duration in Doctor’s clinic group: 24.2 ± 5.2 weeks (median: 24 weeks)
• Follow up duration in nurse clinic group: 16.3± 11.0 weeks (median: 11.7 weeks)
## The main result

<table>
<thead>
<tr>
<th>Variables</th>
<th>Nurse clinic (n=30)</th>
<th>Doctor clinic (n=30)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baseline</td>
<td>Follow-up</td>
</tr>
<tr>
<td>Tender joint count</td>
<td>4 (2, 9)</td>
<td>2.5 (1, 8.25)</td>
</tr>
<tr>
<td>Swollen joint count</td>
<td>1 (0, 3)</td>
<td>0.5 (0, 3)</td>
</tr>
<tr>
<td>Patient global assessment</td>
<td>42.0 ± 24.7</td>
<td>28.7 ± 24.6</td>
</tr>
<tr>
<td>ESR, mm/hour</td>
<td>35.6 ± 19.2</td>
<td>37.0 ± 22.0</td>
</tr>
<tr>
<td>CRP, mg/L</td>
<td>4.6 (1.0, 12)</td>
<td>2.2 (0.7, 8.3)</td>
</tr>
<tr>
<td>DAS28 score</td>
<td>4.53 ± 1.15</td>
<td>4.16 ± 1.31</td>
</tr>
</tbody>
</table>
Result

• The mean follow-up duration for the study cohort was 20 weeks (median: 22.5 weeks).

• Patient global assessment and DAS 28 were similar for both groups at baseline. At follow-up, patient global assessment and in the nurse group decreased from mean ± SD: 42 ± 24.7 at baseline to 28.7 ± 24.6 at follow-up, which was approaching the minimal clinically important improvement (MCII= -15).

• With regards to DAS28, there was a 8.2% decrease (absolute change: -0.38 ± 1.14) in DAS28 in nurse group suggesting a trend of improvement (p=0.081). The corresponding decrease in Doctor’s clinic group was 1.2% (absolute change: -0.05 ± 1.47) and such decrease was not significant (p=0.863). Changes in DAS28 did not exceed minimal clinically important improvement in both groups (MCII= -1.2).
Tender Joint Count

Doctor clinic group (dashed line)
Nurse clinic group (solid line).
Swollen Joint Count

Doctor clinic group (dashed line)
Nurse clinic group (solid line).
Patient Global Health

Doctor clinic group (dashed line)
Nurse clinic group (solid line).
ESR

Changes of ESR level, mm/hr

Baseline Follow-up

Doctor clinic group (dashed line)
Nurse clinic group (solid line).
C- Reactive Protein

Changes of CRP level

Baseline Follow-up

Doctor clinic group (dashed line)
Nurse clinic group (solid line).
Disease Activity Score (DAS28)

Baseline Follow-up

Changes of DAS28 score

Doctor clinic group (dashed line)
Nurse clinic group (solid line).
Conclusion

• This study demonstrates the short-term benefit of a nurse-led program on RA disease management. Future multi-center studies with a randomized controlled design and a larger sample will be required to confirm the findings.
Reference


Hospital Authority (2013). Hospital Authority annual report.


Reference

Thank You

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