The Impact of Structured Pharmacist Counseling on Adherence and Knowledge of Patients on Oral Chemotherapy

Ken Lam
Pharmacist
Prince of Wales Hospital
Content

- Introduction
- Objectives
- Methodology
- Results and discussions
- Conclusions
- References
- Q & A
Introduction

- 1969: Single agent chemotherapy associated with response
- 1979: Gefitinib approved for EGFR-mutant NSCLC
- 2004: Crizotinib approved for ALK+ NSCLC
- 2009: Ceritinib
Introduction

- Overseas studies had revealed the issue of non-adherence among patients on oral chemotherapy. Only 14.2% of patients were perfectly adherent with 100% of prescribed imatinib taken. On the other hand, non-adherence was reported by 23.3% of the 43 participants. Capecitabine therapy has been shown to have negative consequences, including a suboptimal treatment response, imatinib resistance, and disease relapse [19].
Objectives

- To investigate measures pharmacists could contribute to alleviate the problem of non-adherence and provide best care to these patients
Methodology

- Conducted as a prospective, single-center randomized control trial
- Main inclusion criteria: patients newly initiated with oral chemotherapy
- Sample size: n = 98
- Equally divided into intervention group and control group
Methodology

- All subjects received a counseling service provided by clinical pharmacists when they started oral chemotherapy.
- This service educates patients about the use, adverse events of oral chemotherapy, knowledge on management of vomited dose and missed dose, etc.
- Control group only received this single counseling service.
In addition to the mentioned service, all intervention group subjects were followed up by a pharmacist and counseling sessions were provided regularly before each treatment cycle. This lasted for a period of 3 months.
Methodology

- A modified version of Morisky Medication Adherence Scales-4 (MMAS-4) was used to evaluate the adherence of subjects to their oral chemotherapy.
Methodology

- Urgent phone in pharmacist consultation service was offered to all subjects if they had urgent problems and required professional advice from pharmacist.
- Personal phone number of a pharmacist was provided to all subjects.
Results & Discussions
Demographic characteristics

Figure 1. Age Distribution of Two Groups

- Intervention group
- Control Group

p = 0.859
**Demographic characteristics**

**Figure 2. Sex Distribution of Two Groups**

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intervention group</td>
<td>26</td>
<td>23</td>
</tr>
<tr>
<td>Control Group</td>
<td>24</td>
<td>25</td>
</tr>
</tbody>
</table>

$p=0.420$
Figure 3. Oral Chemotherapies involved in the study

- Control Group: 31 Capecitabine, 8 Geftinib, 0 Afatinib, 10 Others
- Intervention group: 24 Capecitabine, 6 Geftinib, 6 Afatinib, 13 Others

$p=0.056$
Figure 4. Non-adherence Rate of Control Group and Intervention Group 3 Months After The Initiation of Oral Chemotherapy

Control Group: 38.80%  
Intervention Group: 8.20%

p < 0.0001
Knowledge on management of vomited dose and missed dose

Figure 5. Knowledge on management of vomited dose and missed dose

- **Vomited dose management**
  - Intervention group: 71.40%
  - Control Group: 6.10%
  - p < 0.0001

- **Missed dose management**
  - Intervention group: 59.20%
  - Control Group: 18.40%
  - p < 0.0001
Urgent phone in pharmacist consultation service

- A total of 68 urgent calls were received during the study period
- 17 (34.7%) subjects in the intervention group had used the service
- 12 (24.5%) subjects in the control group had used the service
A patient called me to report bruising over her arms and legs.

I checked the record carefully and found that the patient just visited A&E 3 days ago because of bloody stool.

During admission to AE, no abnormality was detected and the subject was discharged home (no blood was taken for platelet level).

Previous lab data showed a slightly low platelet level ($140 \times 10^9$ per liter, normal range $150 - 400 \times 10^9$ per liter) with a decreasing trend.
High grade thrombocytopenia was thus suspected by the pharmacist. The patient was reluctant to visit A&E for investigation. However, after half an hour of persuasion with reasons explained, she agreed to visit A&E. The patient was diagnosed with grade 4 thrombocytopenia* (platelet level $20 \times 10^9$ per liter) requiring transfusion of platelet.

*Common terminology criteria for adverse events version 4.0 was used for grading the severity of adverse effects.
Urgent phone in pharmacist consultation service

- 9 subjects were found to have problems requiring doctor’s intervention and referred to doctors by the pharmacist.

- This represented that 31.0% subjects used Urgent phone in pharmacist consultation service were referred by clinical judgment.
Table 1. Reasons for Referral After Urgent Calls

<table>
<thead>
<tr>
<th>Grade 4 thrombocytopenia</th>
<th>Tenesmus with grade 3 diarrhea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade 3, 4 palmar-plantar</td>
<td>Palpitation with shortness of breath</td>
</tr>
<tr>
<td>erythrodysesthesia</td>
<td></td>
</tr>
<tr>
<td>Hematochezia</td>
<td>Loss of oral chemotherapy</td>
</tr>
</tbody>
</table>

*Common terminology criteria for adverse events version 4.0 was used for grading the severity of adverse effects.*
### Classifications of the content of calls

Table 2. Classifications of the content of calls*

<table>
<thead>
<tr>
<th>Category</th>
<th>Intervention group</th>
<th>Control group</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adverse effects</td>
<td>14 (20.6%)</td>
<td>24 (35.3%)</td>
<td>38 (55.9%)</td>
</tr>
<tr>
<td>Drug information</td>
<td>5 (7.4%)</td>
<td>8 (11.8%)</td>
<td>13 (19.1%)</td>
</tr>
<tr>
<td>Drug-drug interaction</td>
<td>5 (7.4%)</td>
<td>3 (4.4%)</td>
<td>8 (11.8%)</td>
</tr>
<tr>
<td>Report of progress</td>
<td>4 (5.9%)</td>
<td>1 (1.5%)</td>
<td>5 (7.4%)</td>
</tr>
<tr>
<td>Others</td>
<td>5 (7.4%)</td>
<td>2 (2.9%)</td>
<td>7 (10.3%)</td>
</tr>
</tbody>
</table>

*some calls consisted of multiple questions; percentage calculated was based on the total of 68 calls from all subjects
Number of episodes of visiting A&E

Figure 6. Episodes of visiting Accident and Emergency Department

- **Control Group**: 16 episodes
- **Intervention group**: 8 episodes

*p*=0.015
Death rate

- Intervention group: 1/49
- Control group: 3/49
- All of these subjects were died due to cancer progression
- The difference in death rate between the two groups was not statistically significant (p=0.617)
The MMAS-4 used in this study was modified to suit the use for the assessment of adherence of cancer patients. Incorrect administration with regard to meal, dosage and frequency were considered as non-adherence. Potential interaction between the urgent phone in pharmacist consultation service and adherence rate. Hawthorne effect. Memory bias. Higher number of subjects in the control group was taking capecitabine in comparison to the intervention group. Short study period.
Conclusions

- Regular counseling service provided to patients newly initiated with oral chemotherapy could significantly improve their drug adherence and knowledge.
- The urgent call service was useful to identify and refer patients who require immediate attention to their conditions to doctors in a timely manner.
Conclusion

Patient  Pharmacist
I would like to convey my thanks to

- All participants
- Benjamin LEE Dr, NTEC CSC (PHAR) / PWPHAR DM (PHAR)
- Grace Chan Dr, Senior Pharmacist
- Oncology clinical pharmacists: So Kai Him, Bonnie Mak, Sally Tsui
- Wings Cheung, Resident Pharmacist
- Caren Shuen, Pharmacist
References


