Using small bowel and colon video capsule endoscopy to optimize Crohn’s disease therapy may improve patient quality of life

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BACKGROUND

- Pan-intestinal Video Capsule Endoscopy (VCE) is capable of assessing both small bowel and colon in a single procedure
- VCE is a widely accepted technology that has application for the management of patients diagnosed with Crohn’s disease (CD) [1]
- Due to the chronic nature of CD, using endoscopic monitoring to optimize treatment may have a considerable impact on both care costs and patient’s quality of life (QoL) [2,3].
- This study aims to identify patient subgroups who may benefit from the use of VCE

METHODS

**Model**

- Published, patient-level, care pathway model that is specific to CD [4]
- Considers patient characteristics such as:
  - Age, gender, ulcers, Crohn’s disease activity index, disease location, comorbidities, etc.
- Check up every 3 months can but does not necessarily include monitoring [1]
- Treatments include immunomodulators, anti-inflammatory agents and biologic agents
- Treatment and monitoring can influence the onset, progression, or remission of CD flares, fistula, abscess, bowel resection, and death [5,6]
- QoL measured in quality adjusted life years (QALYs) through the EQ-5D
- Costs in 2016 USD
- QALY and costs discounted at 3.5% yearly [7]
- Compares outcomes with VCE to the current common monitoring practice of colonoscopy ± MRE or CTE [8]
- Data for VCE were derived from PillCam (Medtronic Inc)

**Analysis**

- 40,000 simulated patients over 20 years were assessed

<table>
<thead>
<tr>
<th>Table 1. Definition of subgroups</th>
<th>Size of subgroup</th>
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<tbody>
<tr>
<td>Abbreviation</td>
<td>Subgroup</td>
</tr>
<tr>
<td>R</td>
<td>Remission</td>
</tr>
<tr>
<td>nAS</td>
<td>Non-active symptomatic</td>
</tr>
<tr>
<td>AS</td>
<td>Active symptomatic</td>
</tr>
<tr>
<td>AnS</td>
<td>Active non-symptomatic</td>
</tr>
<tr>
<td>T</td>
<td>Treatment</td>
</tr>
<tr>
<td>TF</td>
<td>Treatment failure</td>
</tr>
<tr>
<td>S</td>
<td>Surgery</td>
</tr>
<tr>
<td>PST</td>
<td>Post-surgical treatment</td>
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</tbody>
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**RESULTS**

- On average patients had significantly lower costs (p<0.001) and higher QoL (p<0.001) with use of VCE compared to common monitoring practice
- The degree of this effect varied by the initial state of patients (Fig. 1)

**Quality of Life**

- Mean QoL with VCE was 0.68 ± 0.01 greater than with common monitoring practice
- Remission displayed the smallest QoL benefit with VCE (0.48 ± 0.04, Fig. 2)
- Even patients in remission saw QoL improvement in 68% of cases
- All groups displayed a significantly higher chance of QoL improvement over patients starting in remission (Fig. 1)
- Patients in an active symptomatic (79%) or post-surgical state (79%) were the most likely to experience QoL improvement (OR: 1.11, 1.03–1.19, treatment failure (OR: 1.24, 1.09–1.42) and surgery (OR: 1.27, 1.13–1.41) as compared to remission (Fig. 1)

**CONCLUSIONS**

- Assessing the extent of active CD with pan-intestinal VCE is likely beneficial for patient QoL and may also help reduce care costs
- Targeting certain subgroups may amplify the advantages of pan-intestinal VCE
- Patients in need of more frequent follow-up, such as those on biological treatment, post-surgery, or with active symptoms, may be especially benefited by pan-intestinal VCE

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**REFERENCES**