Radiological Findings of 2019-nCoV Pneumonia
PMH Experience

Prepared by Dr SK Li and Dr YC Lee
Department of Radiology
Caritas Medical Centre/ North Lantau Hospital/ Princess Margaret Hospital/ Yan Chai Hospital

10 Feb 2020
• Reviewed the first 9 thoracic CXR and CT scans of the confirmed patients with 2019-nCoV pneumonia
• Summarized the findings and observed a pattern
CXR findings are non-specific
Findings in common:
- Bilateral air-space opacities/ infiltrates
- No pleural effusion
The Key +ve CT Findings

1. Ground-glass opacities (100%)
2. Involvement of multiple lobes (100%)
3. Subpleural or peripheral distribution (often central-sparing) (100%)
4. Consolidations (77.8%)
5. Septal thickening (55.6%)
6. Bronchial dilation and wall thickening (55.6%)
The Important –ve CT Findings

1. Pleural effusion (0%)
2. Lymphadenopathy (0%)
3. Lung nodule (0%)
4. Specific zonal predominance (variable)
<table>
<thead>
<tr>
<th>Patient demographics and imaging features</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total scans included</td>
<td>9</td>
</tr>
<tr>
<td>Age</td>
<td>63.7 (39-75)</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>6</td>
</tr>
<tr>
<td>Female</td>
<td>3</td>
</tr>
<tr>
<td>Days from diagnosis to CT</td>
<td>2.8 (39-75)</td>
</tr>
<tr>
<td>CT technique</td>
<td></td>
</tr>
<tr>
<td>HRCT</td>
<td>7</td>
</tr>
<tr>
<td>Conventional CT</td>
<td>2</td>
</tr>
<tr>
<td>CT findings</td>
<td></td>
</tr>
<tr>
<td>GGO</td>
<td>9 (100%)</td>
</tr>
<tr>
<td>All lobes involvement</td>
<td>8 (88.9%)</td>
</tr>
<tr>
<td>Upper lobes sparing</td>
<td>1</td>
</tr>
<tr>
<td>Peripheral subpleural distribution</td>
<td>9 (100%)</td>
</tr>
<tr>
<td>Zonal predominance</td>
<td></td>
</tr>
<tr>
<td>Upper</td>
<td>3 (33.3%)</td>
</tr>
<tr>
<td>Basal</td>
<td>3 (33.3%)</td>
</tr>
<tr>
<td>Diffuse</td>
<td>3 (33.3%)</td>
</tr>
<tr>
<td>Interlobular/inalobular septal thickening</td>
<td>5 (55.6%)</td>
</tr>
<tr>
<td>Consolidation</td>
<td>7 (77.8%)</td>
</tr>
<tr>
<td>Bronchial wall thickening or dilatation</td>
<td>5 (55.6%)</td>
</tr>
<tr>
<td>Centrilobular nodule</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Pleural effusion</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Lymph node enlargement</td>
<td>0 (0%)</td>
</tr>
</tbody>
</table>

Age and days expressed in means with range in brackets
CT findings expressed in case number with proportions in brackets
Examples
Ground-glass opacities (GGO)
Ground-glass opacities (GGO)
Ground-glass opacities (GGO)
Ground-glass opacities (GGO)
Involvement of multiple lobes

- Often more than one lobes (if not all) show GGO +/- consolidations
Involvement of multiple lobes
Involvement of multiple lobes
Peripheral/ subpleural distribution

• Peripheral/ subpleural regions are almost invariably involved
• Central regions are often spared/ or involved in a later stage
Peripheral/ subpleural distribution

- Peripheral/ subpleural regions are almost invariably involved
- Central regions are often spared/ or involved in a later stage
Peripheral/ subpleural distribution

- Peripheral/ subpleural regions are almost invariably involved
- Central regions are often spared/ or involved in a later stage
Peripheral/ subpleural distribution
Consolidations
Consolidations
Consolidations
Consolidations
Septal thickening
Septal thickening
Septal thickening + GGO → crazy-paving pattern
Septal thickening + GGO → crazy-paving pattern
Bronchial dilatation + wall thickening
Bronchial dilatation + wall thickening
The Important –ve CT Findings

1. Pleural effusion (0%)
2. Lymphadenopathy (0%)
3. Lung nodule (0%)
4. Specific zonal predominance (variable, upper/basal/diffuse distribution each 33.3%)
Why imaging is important

• There have been reports of cases with serial –ve PCR test results ending up +ve later
  • Typical CT findings in combination of suspicious clinical findings probably warrant management as potential carriers even if PCR tests show –ve results

• Community outbreak is inevitable
  • Some outpatient/ routine scans may be performed for other indications
  • If typical nCoV CT findings are seen, these reports require early attention and possible further investigations ASAP
What’s next for Radiology

• Progress CT findings for different clinical courses including improving, worsening, critical cases
• Follow-up CT findings for patients with prior infection to monitor pulmonary sequelae
• Work in close collaboration with clinicians down the road
Special thanks

• To our PMH Infectious Disease team members who are working under great risk in managing the isolated patients and providing us with invaluable clinical information