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Tuberculosis: A Retrospective Review of Cases Treated in Allentown from 2014-July 2019

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Introduction

- Tuberculosis (TB) is an ancient highly contagious bacterial disease caused by a bacterium called *Mycobacterium tuberculosis.*
- TB bacteria are released into the air when a person infected with TB disease of the lungs or throat spreads the bacteria by coughing, sneezing, speaking, or singing.
- Two TB conditions exist:
  TB disease and Latent TB infection (LTBI)
- When active, the bacteria typically attack the lungs but can attack any part of the body including the brain, spine, and kidney.
- TB disease cases remain costly and resource demanding for Health Care Systems.
- The purpose of our study is to review TB disease cases from 2014-July 2019, managed by the Allentown Health Bureau, to learn new knowledge that could apply to our Lehigh Valley practitioners to improve early detection of TB disease.

Methods

- 16 cases of TB disease from 2014-2018 and 1 case of TB disease that completed treatment in July 2019, managed at the Allentown Health Bureau (AHB), were included in this study for review.
- Paper and electronic charts were reviewed and analyzed in six phases for each case.

1. Epidemiologic Data
2. Presentation
3. Diagnosis
4. Treatment
5. Patient Contacts
6. Estimated Cost

Results

Epidemiology at Time of Diagnosis

- Age: 59 years old (28-89 years old)
- Male: 82%
- Female: 18%
- Non-US Born: 88%
- US Born: 12%
- Time Residing in US : 26 years (2-72 years)

Presentation

- Pulmonary TB: 88%
- Fever: 59%
- Cough: 47% (**NO** Cough 53%)
- Length of Cough: 37 days (3-112 days)
- Weight Loss: 53%
- **NO** Known Exposure: 82%
- **NO** Abnormal Labs: 65%
- Abnormal Labs Anemia: 23%

Diagnosis

- **NO** Purified Protein Derivative (PPD) Done: 88%
- QuantiFERON-TB Test: 82% (14 patients)
- QuantiFERON-TB Test Positive: 100% (14 patients)
- HIV (Human Immunodeficiency Virus)
  Negative: 15 (88%) Positive: 1 (12%)
- Able to Produce Sputum: 82%
- Positive Sputum Smear(s): 57%
- Chest X-Ray Done: 100%
- Abnormal Chest X-Ray: 94% (Upper lobes 88%)
- Abnormal Chest CT Scan: 94% (1 not done)

Results Continued

Treatment

- Sensitive to RIPE: 88%
- 1 (12%) Resistant to Isoniazid (INH) and Pyrazinamide (PZA)
- Standard Treatment (6-9mo): 88% (15 patients)
- Extended Treatment (>9mo): 12% (2 patients)

Patient Contacts

- Number of Contacts Evaluated: median 7 (0-78)

Estimated Cost of TB disease

- **Average ESTIMATE: $91,793.15
- **Median ESTIMATE: $44,976.15
- **Range: $1,383.89-$365,486.90

**The average price of the treatment cost for TB disease per patient was based on Health Network Labs (HNL)/Lehigh Valley Physicians Group (LVPG)/Medicare charges.
** Two patient had prolonged inpatient stays that affected the average.
**Additional fees were not included for imaging, procedures, and physician rounds.

Conclusions

- TB disease is still active in Allentown, PA
- TB presentation and epidemiology is changing toward non-US born patients
- TB disease management remains very costly and resource demanding
- Future: early diagnosis/treatment of TB disease & LTBI will greatly reduce the cost of TB management

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