ASSESSING THE CHEST RADIOGRAPHIC SEVERITY OF PULMONARY TUBERCULOSIS AMONG HIV AND NON-HIV PATIENTS

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By

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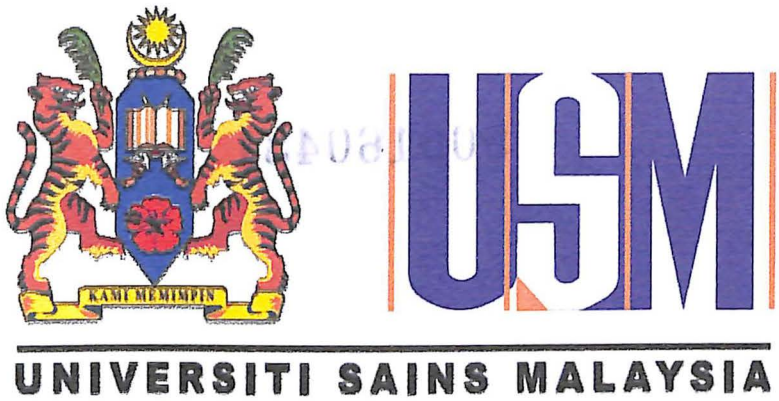

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To

my mum Mdm Sakunthala Pillai

and

my brother Mr Umasangar Pillai

a very special Thank You.

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ABBREVIATIONS AND SYMBOLS

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AFB	Acid Fast Bacilli
AIDS	Acquired Immunodeficiency Syndrome
CDC	Centre for Disease Control
CXR	Chest Radiograph
C/S	Culture and Sensitivity
D/S	Direct Smear
FNAC	Fine Needle Aspiration Cytology
IU	International Tuberculin Units
HIV	Human Immunodeficiency Virus
HRPZ-ll	Hospital Raja Perempuan Zainab-ll
HUSM	Hospital Universiti Sains Malaysia
MKAK	Makmal Kesihatan Awam Kebangsaan
MTB	Mycobacterium tuberculosis
M.Tuberculosis	Mycobacterium tuberculosis
Non-HIV	Non Human Immunodeficiency Virus
NTBC	National Tuberculosis Centre
PCR	Polymerase Chain Reaction
PA	Posteroanterior
PPD	Purified Protein Derivative of Tuberculosis
PTB	Pulmonary Tuberculosis
TB	Tuberculosis
TU	Tuberculin Unit
WHO	World Health Organisation

SYMBOLS

n	number of samples
=	equal to
vs.	versus
i.e.	that is
e.g.	example
x	times (multiply by)
kVp	kilovoltage peak (x-ray tube voltage)
mAs	milliamperes seconds (tube current)
6/12	six months
'05	2005
'08	2008
>	more than
<	less than
&	and

ABSTRACT

ABSTRAK

PENGENALAN

Tuberkulosis paru-paru (PTB) merupakan satu penyakit berjangkit yang paling lazim berlaku di negara-negara membangun dan komplikasi penyakit ini merupakan satu cabaran dan amat sukar didiagnos. Kadar tuberkulosis di kalangan pesakit yang mempunyai daya pertahanan badan lemah adalah sangat tinggi dan ia juga merupakan antara penyumbang utama kepada mobiditi dan mortaliti.

OBJEKTIF

Tujuan utama kajian ini adalah untuk menentukan perhubungkan di antara tahap keparahan radiograf dada pada pesakit PTB dengan status HIV (bukan HIV dan HIV). Kajian ini juga bertujuan untuk menilai perbezaan dalam pelbagai manifestasi radiograf dada yang berbeza di kalangan pengidap PTB bagi dua kumpulan kajian seperti yang dinyatakan di atas.

BAHAN DAN KAEDAH

Kajian ini berbentuk retrospektif, yang mana ia memfokus kepada pesakit PTB di kalangan dewasa yang dijangkiti dan tidak dijangkiti HIV di Hospital Raja Perempuan Zainab-II, Kota Bharu. Pesakit-pesakit yang dipilih untuk kajian ini adalah pesakit yang mempunyai simptom dan tanda-tanda PTB, yang telah disahkan melalui "sputum smear AFB" atau dengan kultur MTB.

KEPUTUSAN

Kadar umur untuk pesakit bukan HIV adalah 46.5 tahun dan untuk pesakit dengan HIV ialah 32.6 tahun. Analisa menunjukkan 93% pesakit bukan HIV dan 94% pesakit HIV pula menunjukkan keputusan radiograf dada yang tidak normal semasa fasa pra-perawatan. Keputusan radiograf dada yang dijalankan selepas enam bulan perawatan dijalankan didapati menunjukkan 18% pesakit bukan HIV dan 31% pesakit HIV mempunyai radiograf dada yang kembali normal. Kajian statistik bagi kedua-dua kumpulan ini didapati tidak mempunyai perbezaan signifikan dari segi tahap keparahan ("severity") radiograf dada pada pesakit PTB semasa fasa pra-perawatan (p-value=0.668) dan selepas perawatan (p-value=0.135). Perbandingan yang dibuat antara dua kumpulan kajian semasa pra-perawatan menunjukkan pesakit HIV dengan PTB lebih kerap menghidapi "pleural effusion" (23% vs. 14%, p-value=0.081) dan "miliari tuberculosis" (7% vs. 3%, p-value=0.196) walaupun tidak signifikan. Pembesaran kelanjar "hilar/mediastinal lymphadenopathy" (32% vs. 4%, p-value<0.001) pula menunjukkan perubahan yang signifikan di kalangan kumpulan pesakit yang disahkan HIV. Manakala pesakit bukan HIV pula lebih ramai mempunyai "pleural thickening" (36% vs. 11%, p-value<0.001), "bronchiectasis" (16% vs. 5%, p-value=0.007) dan "fibrosis" paru paru (41% vs. 17%, p-value<0.001). Perubahan radiograf dada yang menunjukkan "cavitation" (33% vs 24%, p-value=0.177) pula lebih rendah di kalangan kumpulan pesakit HIV tetapi ianya tidak menunjukan perbezaan yang signifikan antara dua kumpulan kajian ini.

KESIMPULAN

Kajian statistik bagi kedua-dua kumpulan yang dikaji mendapati tidak mempunyai perbezaan signikan dari segi tahap keparahan (severity) radigraf dada pada pesakit

mengidap PTB semasa fasa pra-perawatan (p-value=0.668) dan selepas perawatan (p-value=0.135). Kajian ini juga terdapat perbezaan yang signifikan secara statistik di antara pesakit PTB yang dijangiti HIV semasa fasa selepas enam bulan perawatan dengan menunjukan lebih banyak bilangan radiografi dada yand normal. Pesakit PTB yang mengidap HIV juga mempunyai perbezaan yang ketara pada radiograf dada terutamanya dalam manifestasi nodul limfa (lymphadenopathy) "hilar and mediastinum". Sementara itu "pleural thickening", "bronchiectasis", "fibrosis" dan "consolidation" pula lebih kerap pada pesakit bukan HIV.

ABSTRACT

INTRODUCTION

Pulmonary tuberculosis (PTB) is the most common infectious disease in developing countries and the development of complications remains a difficult diagnostic challenge. The proportion of tuberculosis developing in the immunocompromised hosts is especially high and is one of the leading causes of morbidity and mortality.

OBJECTIVE

The main purpose of this study was to determine the association between the chest radiograph severity of pulmonary tuberculosis with HIV status (non-HIV and HIV). This study also evaluated the differences in the various chest radiograph appearances of pulmonary tuberculosis among the above mentioned two study groups.

MATERIALS AND METHODS

This was a retrospective study, focused on adult pulmonary tuberculosis patients with non-HIV and HIV coinfection form Hospital Raja Perempuan Zainab-ll, Kota Bharu. Those patients who had clinical symptoms and signs of PTB with either sputum smear AFB or culture MTB proven pulmonary tuberculosis were recruited for this study.

RESULT

Mean age of the patients in both non-HIV and HIV groups were 46.5 and 32.6 respectively. Ninety three percent (93%) of non-HIV and 94% of HIV patients demonstrated abnormal chest radiograph during pre-treatment phase. Whereas the chest radiograph done six months after the commencement of treatment demonstrated 18%

and 31% of normal finding in non-HIV and HIV patients, respectively. There was no significant statistical difference found among these two study groups in the chest radiograph severity/extent of PTB during pre-treatment (p-value=0.668) and post-treatment (p-value=0.135) phases. Comparison of the two groups showed HIV patients with PTB had higher incidence of pleural effusion (23% vs. 14%, p-value=0.081) and miliary tuberculosis (7% vs. 3%, p-value=0.196), even-though non-significant. Nevertheless, hilar/mediastinal lymphadenopathy (32% vs. 4%, p-value<0.001) demonstrated significant difference in the HIV group. Whereas in non-HIV patients more of pleural thickening (36% vs. 11%, p-value<0.001), bronchiectasis (16% vs. 5%, p-value=0.007) and lung fibrosis (41% vs. 17%, p-value<0.001) were demonstrated. Lesser incidence of chest radiograph presentation with cavitation (33% vs. 24%, p-value=0.177) found in the HIV group, however no significant statistical difference among the two study groups.

CONCLUSION

There was no significant statistical difference found among the two study groups in the chest radiograph severity of PTB during pre-treatment (p-value=0.668) and (p-value=0.135) post-treatment phases. This study also demonstrated significant statistical difference among the PTB with HIV co-infected patients by showing more number of normal chest radiograph in the post-treatment phase. HIV with PTB coinfected patient had considerable differences in the various chest radiograph presentations specifically with hilar/mediastinal lymphadenopathy. While pleural thickening, bronchiectasis, fibrosis and consolidation found more commonly in non-HIV patients.