

Evaluation of Quality of Life Using Short Form-36 and Visual Analogue Scale after Posterior Instrumentation and Fusion in Tuberculous Spondylitis Patients at Cipto Mangunkusumo Hospital

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ABSTRACT

Introduction. Tuberculous spondylitis is a devastating health problem in Indonesia. The goal of treatment is to relieve pain, so the patients can do their daily activities. The instrument used to assess quality of life and perceived pain scale is Short Form-36 and visual analogue scale. The objective of this study is to comprehend the changes in quality of life and pain scale in tuberculous spondylitis patients before and after surgery.

Materials and methods. Forty five patients with tuberculous spondylitis in Cipto Mangunkusumo Hospital were asked to fill Short Form-36 and visual analog scale before and after surgery. The data was analyzed and compared before and after surgery in 8 aspects, which is physical function, physical health, bodily pain, general health, vitality, social function, emotional problems, and mental health.

Results. Surgery significantly improved patients' quality of life in all aspects with average physical component summary from 23 to 70 and mental component summary from 35 to 75 ($p < 0.001$). There was significant decrease in visual analog scale from seven to one. Significant correlations were seen between American Spinal Injury Association status and physical component summary, between American Spinal Injury Association status and mental component summary after surgery ($r = 0.46$ and $r = 0.48$). We categorized the patients into three groups based on duration follow up. There was increased physical component summary and mental component summary for each group. Increased quality of life was shown by improvement of Short Form-36 score. VAS score decreased significantly in post-operative group.

Conclusions. Fusion and posterior instrumentation surgery improves patient's quality of life and decrease the perceived pain scale.

Keywords: Tuberculous spondylitis, Short Form-36, visual analog scale, pain relief, surgery, quality of life

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Evaluasi Kualitas Hidup dengan *Short Form-36* dan *Visual Analogue Scale* Pascafusi dan Instrumentasi Posterior pada Pasien Spondylitis Tuberkulosis di Rumah Sakit Cipto Mangunkusumo

ABSTRAK

Latar Belakang. Spondylitis tuberculosa merupakan masalah kesehatan yang mengancam kualitas hidup pasien. Tujuan tatalaksana penyakit ini adalah bebas nyeri disertai kembalinya fungsi sehari-hari pasien. Penelitian ini memusatkan pada perbaikan kualitas hidup dan skala nyeri dengan instrumen *Short Form-36* dan *visual analogue scale* pasca operasi fusi dan instrumentasi posterior. Penelitian ini bertujuan untuk memahami perbaikan kualitas hidup dan skala nyeri pasien spondylitis tuberculosa pre- dan pascaoperasi.

Bahan dan cara kerja. Sejumlah 45 pasien di Rumah Sakit Cipto Mangunkusumo diminta untuk mengisi kuesioner *Short Form-36* dan *visual analog scale* pre- dan pascaoperasi. Data yang terkumpul kemudian dianalisis dan dibandingkan antara pre- dan pascaoperasi.

Hasil. Operasi meningkatkan kualitas hidup pasien secara bermakna dalam 8 aspek: *physical function, physical health, bodily pain, general health, vitality, social function, emotional problems, dan mental health* dengan peningkatan *physical component summary* dari 23 menjadi 70 dan *mental component summary* dari 35 menjadi 75 ($p < 0,001$). Terjadi penurunan skala nyeri yang bermakna, dari *visual analog scale* 7 menjadi 1. Terdapat korelasi bermakna antara American Spinal Injury Association dengan *physical component summary* dan *mental component summary* pascaoperasi ($r = 0,46$ dan $r = 0,48$). Dilakukan pengelompokan pasien menjadi 3 grup. Terdapat perbaikan rerata *physical component summary* dan *mental component summary* dalam setiap kelompok. Pada komparasi dengan *Short Form-36*, terdapat perbaikan kualitas hidup antara grup pre-operasi dan *follow up*. Skor *visual analog scale* menurun secara bermakna pada kelompok post operasi.

Simpulan. Operasi fusi dan instrumentasi posterior meningkatkan kualitas hidup dan menurunkan skala nyeri pasien.

Kata kunci: Spondylitis tuberculosa, *Short Form-36*, *visual analog scale*, bebas nyeri, operasi, kualitas hidup

Introduction

Tuberculosis is one of the major causes of morbidity and mortality in most third world country, including Indonesia. The involvement of bone and joint in this disease is approximately 10%. Weight bearing joints and those with greater mobility are more likely to be affected. The most frequently affected location in bone tuberculosis is the vertebral column, known as tuberculous spondylitis (Spondylitis TB).^{1,2} Spondylitis TB is most commonly located in the thoracolumbal region; followed by cervical and sacral region.²⁻⁴

We conducted this study to evaluate the quality of life (QoL) and postoperative pain in patient with spondylitis TB at Cipto Mangunkusumo Hospital using Short Form-36 (SF-36) questionnaire and and Visual Analogue Scale (VAS).

Materials and methods

We employed one group pre and post-test design and collected data in Cipto Mangunkusumo Hospital Jakarta. Subjects eligible for the study were those with spondylitis TB who underwent surgery at Orthopaedic and Traumatology Department Cipto Mangunkusumo Hospital Jakarta from January 2010 to December 2011. The inclusion criteria for the study were those aged 14 or above, had no mental and communication disorder, and showed willingness to participate in the research. Those with severe cardiovascular condition, stroke, and complicated diabetes mellitus were excluded.

Forty five subjects fulfilled the research criteria and were enrolled consecutively into the study. After obtaining written informed consent, the subjects were instructed to fill out SF-36 and VAS questionnaire before and after the surgery. SF-36 contains 36 questions which

consist of 8 indicators, including physical function (PF), physical health (RF), bodily pain (BP), general health (GH), vitality (V), social function (SF), emotional problem (RE), and mental health (MH). VAS was used to measure and describe subjective pain with scale ranging from 0 (no pain) to 10 (worst possible pain). These instruments have been proven to be useful in evaluating level of pain in various medical phenomena.⁵ SF-36 and VAS were compiled and translated into scoring system. The pre- and postoperative scores were compared using student t-test.

For the purpose of subgroup analysis, the patients were categorized into three groups based on the duration of follow up. The first group included patients with follow up period of six to twelve months, while the second and the third group included patients with follow up period of 13 to 18 months and 19 to 24 months respectively.

Results

The mean duration of follow up in our study was 15.9±0.7 months. Most patients (75.7%) were adults aged between 15 to 35 years old. Lumbar vertebrae were the most common vertebrae involved (40%) and most spondylitis TB involved 2 columns (75.5%). The improvements in American Spinal Injury Association status (ASIA) and clinical symptoms were outline in table 1.

The improvement of indicators of SF-36 were shown in figure 1. The Physical Component Summary (PCS) and Mental Component Summary (MCS) significantly improved from 23 to 70 and 35 to 75 respectively (p < 0.01). Improvement in quality of life was shown in figure 2. Pain of patient in our study decreased from 7.02 ±1.852 to 1.44 ±1.09 after the surgery. The decline was statistically significant with p < 0.001.

Discussions

Most patients were in productive age, therefore spondylitis TB may affect society’s productivity in

general. Improvement of neurological status after surgery in our study is in line with the finding of Nas,⁶ Wang,⁷ and Zen.⁸

We found significant increase in PF, RF, BP, GH, V, SF, RE, and MH. They perceived more calm, peaceful, and happy after the surgery. These are important points to be evaluated because perception towards spondylitis TB with deformity (gibbus) and sinus contributes to patient’s lack of confident. QoL improvement in our study is similar to research finding by Nas.⁶ In accordant with better ASIA status, patient had better physical and mental condition.

Improvement in QoL is evident by comparing patient’s SF-36 score before and after surgery. A QoL research reported that earlier diagnosis, appropriate medications, and operative procedure accompanied with rehabilitation program enhanced QoL after 6 months.⁶ Seventy percent of the patients were independent; with only 4% of the patients become dependent.

In our study, one of the 45 respondents had ASIA A status with pre-operative PCS and MCS score of 10.6 and 21.1. The ASIA status improved to ASIA B, while PCS and MCS to 33.8 and 51.4 after the surgery. Despite the increase in ASIA status, PCS and MCS scores, the scores of PCS and MCS were still 20 points below the average score. It meant that even though QoL improved, it was still lower than that of others. The finding is in line with research by Jain, et al.⁹, which stated that minimal sensory improvement could increase QoL.⁹

Regarding pain scale, our findings is similar to previous research by Wang,⁷ Zeng,⁸ and El Sharkawi.¹⁰ The previous studies included anterior decompression, fusion and anterior instrumentation, or posterior approach for decompression, fusion and instrumentation. Our study used the posterior approach for decompression, fusion and instrumentation with or without bone grafting anteriorly. Using both of these techniques, the result

Table 1. Patient’s clinical presentation pre and post-operative

Clinical Presentation	Pre		Post	
	n	%	N	%
CNS Abnormality				
ASIA A	1	2.2	0	0
ASIA B	1	2.2	2	4.4
ASIA C	7	15.5	1	2.2
ASIA D	11	24.4	3	6.6
ASIA E	25	55.5	39	86.7
Sinus	10	22.2	0	0
Clinical Abcess	16	35.5	0	0

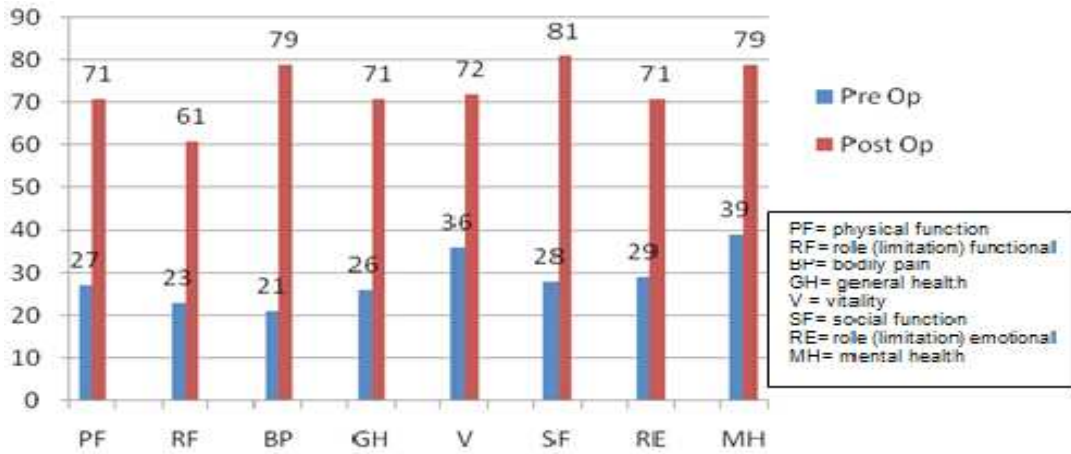


Figure 1. Average SF-36 score

was imminent and similar whether one or two-staged procedure was done. Both techniques granted satisfying result. Patient reached optimum pain-free condition after the surgery.

Conclusions

Operative management has been proven to increase QoL as well as to decrease pain in spondylitis TB. We suggest this study to be repeated with broader research population on several centers. Alternatively, it can be done with regular follow up in a longer duration. By that, a spondylitis TB database can be made. The results can be utilized as a basis in comparing the procedural efficacy of operative and non-operative treatment in relation to QoL and pain on spondylitis TB patients.

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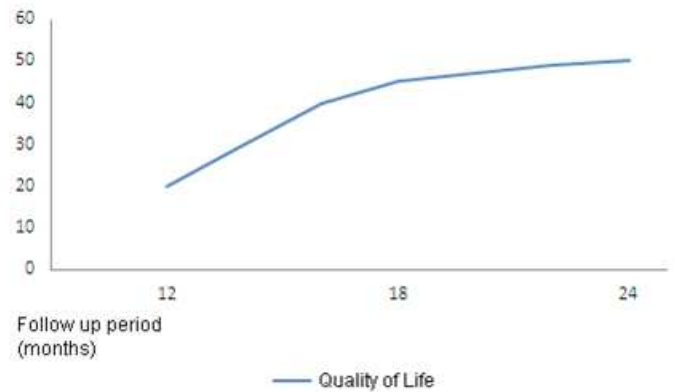


Figure 2. Quality of life improvement curve

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