

난치성 정신분열증 환자에 대한 Clozapine 치료의 비용 효과

이홍식 · 서호석 · 김찬형 · 송동호 · 김진학

ABSTRACT

Cost-Effectiveness of Clozapine Treatment for Patients with Refractory Schizophrenia

Hong-Shick Lee, MD, Ho-Suk Suh, MD, Chan-Hyung Kim, MD,
Dong-Ho Song, MD and Jin-Hak Kim, MD

Department of Psychiatry, Yonsei University, College of Medicine, Seoul, Korea

Objective : Although antipsychotic treatments are effective for schizophrenia, at least 25% of schizophrenic patients have little response to conventional neuroleptics. Although patients respond well to anti-psychotics initially, they often result in heavy loss of costs and social burden due to the frequent relapse which often require intensive institutional care while the patients experience significant social and functional disabilities. Many studies have come out recently concerning the cost of schizophrenia and its cost-effectiveness in treatment. Clozapine has the risk of agranulocytosis and greater initial cost, however, it has been reported to be cost-effective for the treatment of refractory schizophrenia because of its highly effectiveness, in addition, it has reduced rehospitalization rates and hospital stays. The purpose of this retrospective study was to ascertain the cost-effectiveness of clozapine treatment for patients with refractory schizophrenia in Korea. **Method :** We studied 17 patients with refractory schizophrenia treated by clozapine over a two year period. The numbers of hospitalization, hospital stays two years before clozapine treatment, and two years after clozapine treatment were investigated. Direct costs of psychiatric hospitalization, outpatient treatment, and other costs were estimated. Data on patients' clinical characteristics, use of mental health services and information about the cost of treatments were collected from psychiatric hospitalization records, outpatient records and hospital administration records. Some of the patient data information before the introduction of clozapine treatment were gathered through direct interviews of their families. Therapeutic outcome measures included the Clinical Global Impression (CGI) scale and Global Assessment of Functioning (GAF) score. **Result :** At the initial clozapine treatment, the mean age of subjects was 29 (± 7.9) years old. The mean duration of previous psychiatric treatment was 8 (± 3.0) years. Average total direct costs were reduced from ₩4,106,480 in the second pretreatment year to ₩2,338,427 in the second posttreatment year while the mean hospitalization costs, a percentage of total direct costs, were reduced from 82.9% to 27.4%. Also, the mean hospital stays per year were decreased from 83.4 days to 15.7 days, the mean numbers of hospitalization from 0.59 to 0.18. CGI scale scores and GAF scores showed a statistically significant clinical improvement between before and after clozapine treatment. **Conclusion :** These results suggest that a long-term treatment of clozapine for patients with refractory schizophrenia is indeed more

1996
1997 10 23 40
: , 135 - 270 146 - 92
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Clozapine

cost-effective than conventional neuroleptic treatment. We suggest more comprehensive and prospective study due to the limitations of this retrospective study. (**Korean J Psychopharmacol 1998;9(1):27-34**)

KEY WORDS : Refractory schizophrenia · Cost · Cost-effectiveness · Clozapine.

서 론

1% 가

25%

가

20 30% 2

¹⁾ Fein 37 (extrapyramidal symptom) 75 95%

10

²⁾ Gunderson Moshier GDP 2% 20% 가 (tardive dyskinesia)가

³⁾ 1 1985 1036

1988 1293 가

546 41% 52.7% 1990 1 clozapine 가

⁴⁾ 1990 3 1 가

1.6% 가

⁵⁾ Andrews 500 ¹²⁾ clozapine 6

New South Wales 1 30%, 12 60%가 가

880 (1975) ¹³⁾⁽¹⁴⁾ 가

1 ⁶⁾ 1 13 clozapine 가

가

⁷⁾⁽⁸⁾ Wasylenki ¹⁶⁾ clozapine 가

⁹⁾ 가

¹⁰⁾ 가

¹¹⁾ 가

¹⁵⁾ 가

Clozapine

Clozapine 1993
 clozapine , clozapine
 가 1997 가
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3) 자료 분석

SPSSWIN(Statistical
 Package for the Social Science for Windows)
 package . Clozapine 2
 2 CGI , GAF
 paired t - test , clozapine 2
 2
 paired t - test
 0.05

Table 1. Characteristics of patients*

	Mean	SD
Age at initial clozapine trial	28.9	7.9
Durations of previous treatment	8	3.0

*N = 17, male = 11, female = 6

Table 2. Comparisons of duration of hospitalization and numbers of admission between before and after clozapine trial*

	2nd year before	2nd year after	p
Days of hospitalization ^a	83.4 (125.3)	15.7 (34.9)	<0.05
No. of admission ^b	0.59 (0.71)	0.18 (0.39)	<0.05

*N = 17, Each value is mean (SD)

a : Paired t-test(t = 2.44, df = 16)

b : Paired t-test(t = 2.13, df = 16)

결 과

1. 임상 자료
 Clozapine 17
 29 (±7.9) , 8 (±3.0)
 , 가 11 , 가 6 (Table 1).
 Clozapine 2 1 2 1
 83.4 15.7
 (t = 2.44, df = 16, p<0.05), 0.59
 0.18 (t = 2.13, df = 16, p<0.05),
 가 (Table 2). Clozapine
 CGI 5.06 2 3.82
 (t = 4.07, df = 16, p<0.01), GAF
 clozapine 35.6 2 56.2
 가 (t = - 7.25, df = 16, p<0.01),
 (Table 3).
 12 4 clozapine
 , clozapine
 4 2 1
 4 1
 47.3 5.5 , 0.58
 0.17
 (Table 4). Clozapine CGI 5.00

Table 3. Comparisons of CGI score and GAF scale score between baseline point and 2 years later point after clozapine initial trial index date*

	Baseline point	2 years later point	t-value	p
CGI	5.06 (1.14)	3.82 (0.73)	4.07	<0.01
GAF	35.59 (12.61)	56.18 (11.11)	- 7.25	<0.01

*Paired t-test, N = 17, Each value is mean (SD)

Table 4. Comparisons of durations of hospitalization and numbers of admission between 2nd year before and 4th year after clozapine trial*

	2nd year before	4th year after	p
Days of hospitalization	47.3 (75.0)	5.5 (14.8)	0.069
No. of admission	0.58 (0.79)	0.17 (0.39)	0.054

*Paired t-test, N = 12, Each value is mean (SD)

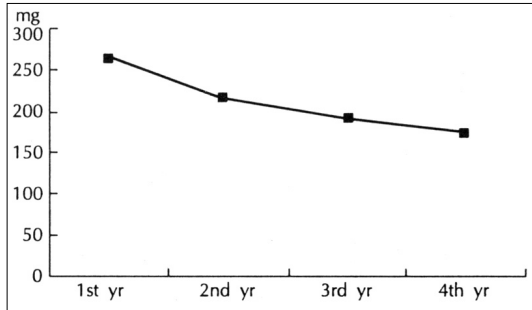


Fig. 1. Mean daily clozapine dosage over a 4-year period.

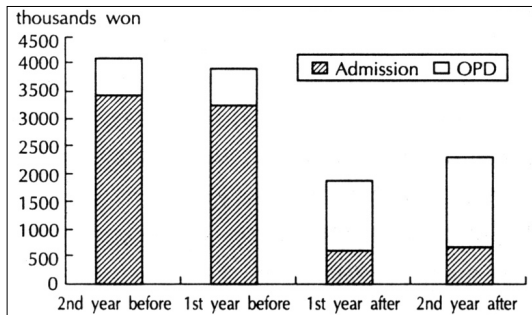


Fig. 2. Change in total costs 2 years before and 2 years after clozapine treatment.

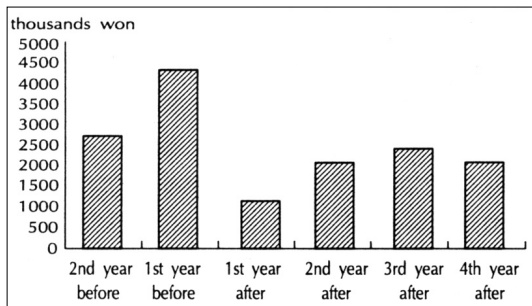


Fig. 3. Change in total costs 2 years before and 4 years after clozapine treatment.

4 3.42 (t = 4.42, df = 11, p < 0.01), GAF clozapine 36.3 4 61.3 가 (t = -7.18, df = 11, p < 0.01). clozapine , clozapine 1 268 mg 2 222 mg, 3 193 mg, 4 175 mg (Fig. 1).

2. 치료비용 비교

Clozapine 2 2 4,106,480 (1997) 2,338,427 , 82.9% 27.4% (Fig. 2). , 2 2 4 clozapine 12 , clozapine 2 4 2,723,238 (1997) 1,758,045 , 71.0% 13.3% (Fig. 3). 고 찰 clozapine 2 17 2 1 가 2 1 , 2 1 4 : 1 , 2 1 1 : 3 . 17 2 5 6 . clozapine 가 , Clozapine 4 12 4 . cl- ozapine . Meltzer 37 - clozapine , 2 42,935 23,772 , clozapine 2

Clozapine

84 , clozapine 2
 11 clozapine 24
 .¹⁸⁾ Honigfeld 16 , 7 , 1
 clozapine 가
 , 2 20,000 1993 clozapine
 .²⁴⁾ Davies Dru - clozapine 가
 mmond clozapine ,
 가
 5.87 가 , 91 가 ,
 가 .⁵⁾ Jonsson tapering washout ,
 Walinder 18 clozapine 20 clozapine 가, 16
 70% - 가 clozapine
 clozapine 가 .²⁵⁾ (SD = 81.6) . Meltzer clozapine
 clozapine 17 51.0 (SD = 30.0)
 가 .¹⁸⁾ Revicki
 . clozapine ,
 clozapine 1996 가 3
 clozapine 6 .²⁰⁾
 clozapine 14 가
 .
 clozapine 6,703,137 (1997)
 . , clozapine 1
 가 , clozapine 3,923,802 .
 가 , clozapine 1
 2 1 2 1
 . , 가
 clozapine 가 가
 가 ,
 가 . , 가
 가 , 가

가
 Clozapine 29
 (± 7.9) , 8 (± 3.0)
 2 2
 4,106,480 (1997)
 2,338,427 ,
 가
 82.9% 27.4% 가
 83.4 15.7 , 0.59
 요 약
 0.18 CGI clozapine
 5.06 2 3.8
 목 적 : (t=4.07, df = 16, p<0.01), GAF 35.6
 25% 가 (t = - 7.25, df = 16,
 가 p<0.01) 가 .
 clozapine

가 . 1990
 clozapine 가
 가 가
 중심 단어 : . . .
 clozapine.

참고문헌

- clozapine
 방 법 :
 clozapine 2
 17
 2 ,
 Clozapine
 , clozapine
 GAF 가 CGI ,
- 1) Rupp A, Keith SJ(1993) : *The costs of schizophrenia, Assessing the burden. Psychiatric Clinics of North America* 16(2): 413-23
 - 2) Fein R(1958) : *Economics of mental illness. New York:Basic Books*
 - 3) Gunderson JG, Mosher LR(1975) : *The cost of schizophrenia. Am J Psychiatry* 132:901-6
 - 4) Rice DP, Kelman S, Miller LS(1991) : *Estimates of economic costs of alcohol and drug abuse and mental illness, 1985 and 1988. Public Health Reports* 106(3):280-91
 - 5) Davies LM, Drummond MF(1993) : *Assessment costs and benefits of drug therapy for treatment-resistant schizophrenia in the United Kingdom. Br J Psychiatry* 162:38-42
 - 6) Andrews G, Hall W, Goldstein G, et al(1985) : *The economic costs of schizophrenia: The implications for public policy. Arch Gen Psychiatry* 42:537-43
 - 7) Golberg D(1994) : *Cost-effectiveness in the treatment of patients with schizophrenia. Acta Psychiatr Scand* 89(suppl. 382): 89-92
 - 8) Goldberg D(1991) : *Cost-effectiveness studies in the treatment of schizophrenia: A review. Schizophr Bull* 17:453-9
 - 9) Wasylenki DA(1994) : *The cost of schizophrenia. Can J Psychiatry* 39(suppl. 2):S65-S9
 - 10) Kane JM(1987) : *Treatment of schizophrenia. Schizophr Bull* 13:147-70
 - 11) Kane JA, Woerner M, Borenstein M, Wegner J, Liberman J (1986) : *Integrating incidence and prevalence of tardive dy-*

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- skinesia. Psychopharmacol Bull* 22:254-8
- 12) Kane J, Honigfeld G, Singer J, Meltzer HY, Clozaril Collaborative Study Group(1988) : *Clozapine for the treatment-resistant schizophrenia: a double-blind comparison with chlorpromazine. Arch Gen Psychiatry* 45:789-96
 - 13) Meltzer HY(1992) : *Treatment of the neuroleptic-nonresponsive schizophrenic patient. Schizophr Bull* 18:515-42
 - 14) 이홍식 · 이희상 · 남궁기 · 김찬형 · 최낙경 · 도정호 · 전지용 · 황영신 · 유계준 · 이호영(1993) : 치료저항 정신분열증 환자에서의 clozapine 효과. *대한정신약물학회지* 4:161-8
 - 15) Tamminga CA, Thaker GK, Moran M, Kakigi T, Gae XM(1994) : *Clozapine in tardive dyskinesia: observations from human and animal model studies. J Clin Psychiatry* 55:102-6
 - 16) Buchanan RW, Holstein C, Breier A(1994) : *The comparative efficacy and long-term effect of clozapine treatment on neuropsychological test performance. Biol Psychiatry* 36:717-25
 - 17) Alvir JMJ, Lieberman JA, Safferman AZ, Schwimmer JL, Schaof JA(1993) : *Clozapine-induced agranulocytosis and incidence and risk factors in the United States. N Engl J Med* 329:162-7
 - 18) Meltzer HY, Cola PA, Way L, et al(1993) : *Cost effectiveness of clozapine in neuroleptic-resistant schizophrenia. Am J Psychiatry* 150(11):1630-8
 - 19) Meltzer HY, Cola PA(1994) : *The pharmacoeconomics of clozapine: a review. J Clin Psychiatry* 55(suppl B):161-5
 - 20) Revicki DA, Luce BR, Weschler JM, et al(1990) : *Cost-effectiveness of clozapine for treatment-resistant schizophrenic patients. Hospital and Community Psychiatry* 41(8):850-4
 - 21) American Psychiatric Association(1987) : *Diagnostic and Statistical Manual of Mental Disorders. 3rd ed. revised, Washington DC, American Psychiatric Association, pp187-98*
 - 22) Guy W(1976) : *ECDEU Assessment Manual for Psychopharmacology. Publication ADM 76338, Rockville, Md, US Dept. of Health Education and Welfare*
 - 23) 한국은행(1998) : *조사통계월보. 1998년 2월호, 통계편. pp84-5*
 - 24) Honigfeld G, Patin J(1990) : *A two-year clinical and economic follow-up of patients on clozapine. Hospital and Community Psychiatry* 41(8):882-5
 - 25) Jonsson D, Walinder J(1995) : *Cost-effectiveness of clozapine treatment in therapy-refractory schizophrenia. Acta Psychiatr Scand* 92:199-201