

소아청소년 정신과 영역에서의 새로운 약물치료 ;  
비정형 항정신병약물\*

NEW DRUG THERAPY IN CHILD AND ADOLESCENT  
PSYCHIATRY ATYPICAL ANTIPSYCHOTICS

반 건 호\*\*†

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요 약 :

가  
가

중심 단어 :

서 론

Clozapine risperidone haloperidol zine 12, 6 1).  
가 가  
15 risperidone 1).  
가 가  
가 가

chlorpromazine  
6, 3 가  
, pimozide trifluopera-

2002

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가 2). ( 4~66 ). 가 2). Clozapine 5-HT<sub>2A</sub>, D1, D3, D4, ( 1) . D<sub>2</sub>

가 haloperidol 10mg D<sub>2</sub> 80% clozapine D<sub>2</sub> 40~50% D<sub>2</sub> 가 clozapine 가 5).

**본 론**

clozapine, risperidone, olanzapine, quetiapine, zotepine, amisulpride ziprasidone

**3. 적용중**

(Table 1). Schmidt 6) clozapine 2/3 가 가 가 clozapine

**Clozapine**

**1. 일반특성**

1989 , 3). Clozapine risperidone(1993), olanzapine(1996), quetiapine (1997), ziprasidone(2001) Kumra 4) olanzapiner clozapine

Kumra 7) 가 . clozapine haloperidol , clozapine 가 clozapine Zuddas 8)

clozapine ‘ gold standard ’

**4. 부작용**

가2) 가 Taylor McAskill9)

**2. 약동학 및 작용기전**

100mg 2.5 (1~6 ) 319(102~771)ng/mL demethylated, hydroxylated, N - oxide , 30% 75mg 8 ( 4~12 ). 100mg

1980~1999 가 Clozapine . Clozapine olanzapine, quetiapine . risperidone, sertindole, zotepine , amisulpride . Ziprasi- done 가 가 가 olanza-

**Table 1.** Atypical antipsychotic medications studied in children & adolescents\*

Generic name	Chemical class	Dose range (mg/day)	Potency	Approximate dose equivalents (mg)	Neuropsychiatric disorder(s) studied	Key references
Clozapine	Dibenzodiazepine	25 - 900	Low	100	Treatment-resistant illnesses Schizophrenia Bipolar disorder Autistic disorder	Kumra et al., 1996 Kowatch et al., 1995 Zuddas et al., 1996
Olanzapine	Thienobenzodiazepine	5 - 20	Medium	5	Bipolar disorder PDD Schizophrenia	Frazier et al., 2000 Potenza et al., 1999 Kumra et al., 1998
Quetiapine	Dibenzothiazepine	25 - 750	Low	100	Psychotic disorders	McConville et al., 2000
Risperidone	Benzisoxazole	0.25 - 10	High	2	Bipolar disorder Conduct disorder PDD Psychotic disorders Tic disorders	Frazier et al., 1999 Findling et al., 2000a McDougle et al., 1997 Armenteros et al., 1997 Lombroso et al., 1995
Ziprasidone	Benzisothiazolyl	25 - 160	Medium	20	Tic disorders	Sallee et al., 2000a

\* : from Pediatric psychopharmacology (Martin et al 2003), p329

pine clozapine

가  
clozapine 1~2%  
2). 1997 clozapine 150,409  
585 19 11).  
Kumra 7) 21  
1.5~2.0%  
clozapine N -  
desmethyl - clozapine 15  
300mg  
1~2% 가 , 300~599mg  
3~4%, 600~900mg 5% 가 가  
2).  
Kay 12) clozapine 16  
troponin

## Risperidone

### 1. 일반특성

Risperidone 1993 FDA 가  
가  
가

### 2. 약동학 및 작용 기전

cytochrome P450 IID<sub>6</sub>  
9 - hydroxyrisperidone  
risperidone

가 9-hydroxyrisperidone  
3 ,  
17 . 7%  
가 . 가  
3 , 20  
. 9-hydroxyrisperidone  
21 , 30 <sup>2)</sup>  
Risperidone 5-HT<sub>2A</sub>, D<sub>2</sub>, 2-  
, H1 . -  
,  
. haloperidol D<sub>2</sub>  
, haloperidol  
5)

**3. 적응증**

14) ,  
, <sup>2)</sup> McDougle <sup>15)</sup> 1997  
NIMH risperi-  
done , risperidone  
,  
risperidone  
<sup>16)</sup>  
Turgay <sup>17)</sup> ,  
48 risperidone  
risperidone 가  
, 가 . Aman <sup>18)</sup>  
risperidone (가  
)  
Fras Major <sup>19)</sup>

risperidone  
, 3mg , 2mg  
Lombroso <sup>20)</sup>  
risperidone

Bruggeman <sup>21)</sup> risperidone pimozide  
risperidone  
Perry <sup>22)</sup>  
risperidone  
가 , 가,  
, 가,  
McCracken <sup>23)</sup>  
, 101  
risperidone  
Olanzapine risperidone  
risperidone  
<sup>24)</sup> risperidone 5-HT<sub>1D</sub>  
.  
<sup>15)</sup>  
Fitzgerald <sup>25)</sup>  
risperidone

**4. 부작용**

, 가,  
<sup>26)</sup> McDougle <sup>15)</sup>  
가  
가  
McCracken <sup>23)</sup>  
,  
risperidone  
가 가  
,  
Turgay <sup>17)</sup>  
,  
Aman <sup>18)</sup>  
가  
가  
Risperidone 10%  
<sup>27)</sup>

**Olanzapine**

**1. 일반특성**

1997 FDA 가 .

olanzapine 가

26)

**2. 약동학 및 작용기전**

90% 21~

54 ( 30 ).

pine Olanza-  
cytochrome  
P450 가  
10 - N - glucuronide 4 ' - N - desmethyl ola-  
nzapine 가  
7%  
30% 60%  
30%  
olanzapine cytochrome  
P1A2  
가 . Olanzapine  
30%  
40% 2)  
Olanzapine 5HT<sub>A</sub> : D<sub>1</sub>, D<sub>2</sub>, D<sub>4</sub> ; 1,  
M<sub>1</sub> M<sub>5</sub>, H<sub>1</sub> 5)

**3. 적응증**

2). Kumra 4)  
olanzapine clozapine

가  
Grothe (2000)  
olanzapine  
10mg 28)  
Kemner 29)  
가, 가,

olanzapine ha-  
loperidol 가 30)  
Chang Ketter<sup>31)</sup>, Khouzam El - Gabalawi<sup>32)</sup>,  
Frazier<sup>33)</sup>, olanzapine  
olanzapine Powers<sup>34)</sup>  
, Mehler<sup>35)</sup>  
olanzapine 가  
olanzapine 가  
35)  
Karam - Hage Ghaziuddin<sup>36)</sup>  
olanzapine  
olanzapine<sup>37)</sup>

**4. 부작용**

가 , 가 , ,  
26) risperidone, olanzapine,  
haloperidol 가  
olanzapine, risperidone, haloperidol  
(7.2 ± 6.3Kg, 3.9 ± 4.8Kg, 1.2 ± 3.3Kg)<sup>38)</sup>.  
가 , 가  
가 가

**Quetiapine**

**1. 일반특성**  
1997

**2. 약동학 및 작용기전**

1.5  
CYP3A4  
sulfoxide

HT<sub>2A</sub>, -1 가 D<sub>2</sub>, D<sub>3</sub>, D<sub>4</sub>  
 Quetiapine 5-HT<sub>2</sub> 5-HT<sub>6</sub>, D<sub>1</sub> D<sub>2</sub>, H<sub>1</sub>, 1  
 2 . Quetiapine

3. 적용증

가 39) McConville  
 40) 가

4. 부작용

가 6 3)

Zotepine

1. 일반특성

1970 Thiepin . 1982  
 가 42) 가 43)

2. 작용기전

Zotepine zotepine D<sub>1</sub>, 5-

3. 적용증

Tanoue Oda<sup>42)</sup> 가

4. 부작용

가가 가 44)  
 가 43) 43)

Amisulpride

1. 일반특성

1986 45)

2. 약동학 및 작용기전

5-HT<sub>2</sub>/D<sub>2</sub> mesolimbic selectivity  
 46) amisulpride sertindole, olanzapine, quetiapine

3. 적용증

47)가 가 48) 49)

4. 부작용

가 가 D<sub>2</sub> 가 가 가 가 45)

# Ziprasidone

## 1. 일반특성

가 50)

## 2. 약동학 및 작용기전

2~6 2  
가 5~10

Ziprasidone 5-HT<sub>1D</sub>, 5-HT<sub>2A</sub>, 5-HT<sub>2A</sub>, 5-HT<sub>2C</sub>, D<sub>2</sub>, D<sub>3</sub>, D<sub>4</sub>, 1, H<sub>1</sub>, D<sub>1</sub>, M<sub>1</sub>, ziprasidone 2 5-HT<sub>1A</sub>, ziprasidone 5)

## 3. 적응증

Sallee 28 8 ziprasidone YGTSS(Yale Global Tic Severity Scale) 가

**Table 2.** Lab tests for child & adolescent using atypical antipsychotics

Items	Drugs	Etc
Weight	a, b, c, d	
B/P & P/R	a, b, d, f	
EKG QT interval	a, c, d, e, f	
Serum glucose	a, c, d	
Cholesterol(total)	a, b, c, d	
WBC	a	
TFT(T4, TSH)	d	
RBC	f	
Hgb	f	
Slit lamp ophthalmic Ex	d	Every 6 months
Platelet	a, b, c	
LFT	b	Base
LFT	a, b, c, d, f	Every 3 months
EEG	a, f	

a : clozapine b : risperidone c : olanzapine d : quetiapine e : ziprasidone f : zotepine

## 4. 부작용

가 QTc  
가 QTc  
fluoroquinolone 26)

## 소아청소년 약물 치료 시 고려 사항

Table 2

51)

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## NEW DRUG THERAPY IN CHILD AND ADOLESCENT PSYCHIATRY ATYPICAL ANTIPSYCHOTICS

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Conventional antipsychotics are commonly used to treat children and adolescents suffered from schizophrenia to other neuropsychiatric conditions. Regrettably, studies for typical antipsychotics report high rates of sedation, orthostatic hypotension, and extrapyramidal side effects. Over the past few years, atypical antipsychotics have been prescribed for use in adults with psychotic symptoms. Child psychiatrists have begun using these drugs to children and adolescents hoping safe and better alternatives to the conventional antipsychotics. However, there is not enough short-term and almost no long-term data about atypical antipsychotics for pediatric patients. Therefore, the purpose of this article is to review what is known about the use of the atypical antipsychotics in young patients. To do so, an appropriate approach to the use of these drugs in child and adolescent patients may be offered.

KEY WORDS : Atypical antipsychotics · Child and adolescent.