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A Comparison of Buprenorphine and Methadone Treatment of Heroine Dependency

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Abstract: At the present time heroine dependency is treated by methadone. In order to determine the effectiveness of another medicine named buprenorphine, an interventional study has been carried out. In this interventional study of 70 patients, compared buprenorphine (2 mg) and low dose (20 mg) methadone as treatment for heroine dependence. Buprenorphine and methadone were administered daily for 15 days. There were 35 patients in each group. Comparison between groups for withdrawal sign and symptoms showed no significant differences. As compared with low-dose methadone and buprenorphine, it was shown that buprenorphine is a suitable treatment for heroine addiction in terms of decreased withdrawal sign and symptoms.

Key words: Buprenorphine, methadone, heroine, addiction

INTRODUCTION

Opioid dependence is an important national health problem, with an estimated 980000 long-term users of heroine in the United States[1]. Progress in treating opiate addiction with medications has also been made. Several approaches have been developed to detoxifying opiate dependent patient. These include slow methadone withdrawal, therapy and buprenorphine detoxification. An advantage of buprenorphine, along acting partial opioid agonist, is that it partially mitigates withdrawal symptoms and signs[2]. Methadone is a full agonist of opioid receptor with half-life of about 18 h. It is metabolized in liver and excreted via kidneys[3-5].

Buprenorphine is a partial agonist of opioid receptors with half-life of about 1.2-7.2 hour. It is metabolized in liver and excreted through kidneys[4,6]. Both drugs have a high absorbability through *intra venous* and oral route and they reaches high blood concentration very quickly[6]. Controlled studies of methadone[7,8] and buprenorphine[9,10] have documented their dose related efficacy in terms of retaining patients in treatment and reducing illicit opioid use. A clinical advantage of buprenorphine is the option of less-than-daily doses, which is made possible in the case of buprenorphine by the long half-life of its active metabolites[11, 12].

Several controlled trials have compared the efficacy of buprenorphine[8,9,13] with the methadone. We compared the buprenorphine and methadone as treatment of heroine dependence.

MATERIALS AND METHODS

Seventy patients participate in this randomized, controlled study with two treatment groups. The eligibility criteria were an age of 20 to 30 years, diagnosis of heroine dependence according to the criteria of the Diagnostic and Statistical Manual of Mental Disorder, 4th edition, evidence of recent opioid use on toxicologic screening, the absence of serious medical or psychiatric illness requiring long-term medication. The study was approved by the local institutional review board, and all patients provided written informed consent. Patient enrolled between April 2005 and August 2005. They were stratified according to the following variable: age, current other opioid use and marital status. They were randomly assigned to one of two treatment groups include 35 patients each: buprenorphine and low dosemethadone.

Randomization occurred on the day of enrollment the patients and clinic staffs were unaware of treatment assignments and medication doses. The low dose

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methadone group (the control group) received a fixed dose of 20 mg and the buprenorphine group (the case group) received a fixed dose of 2 mg daily for 15 days. In duration of study the patients were kept under observation for appearance of following withdrawal symptom and signs: Anorexia, abdominal pain, insomnia, bone pain, mydriasis, tendency to use drug again, sweating, rhinorrhea, vomiting, restlessness, weakness, pulse rate, respiratory rate, blood pressure and body weight. In addition patients evaluated in three days after completing buprenorphine and methadone administration without checking the drug levels in serum or blood. We used for statistical analysis t-test and $p<0.001$ were showed the findings significant.

RESULTS AND DISCUSSION

Results showed that there were no significant differences between groups in demographic characteristics including (age, education, marriage, employment, legal problem, alcohol use and consumption of other opiates). There were significant differences in study retention among the two groups. There were no significant differences in observation of withdrawal symptoms and signs; in during administration between groups but 3 days after completing administration buprenorphine was significantly better than methadone (Table 1).

Buprenorphine was effective in treating heroin dependence. The percentage of patients showed withdrawal syndrome compared favorably with rates reported elsewhere for this medication[11-13].

Buprenorphine has a unique pharmacology that has suggested its use for the clinical management of heroin dependent individuals. Many formal controlled studies have shown that it gives comparable results to methadone treatment[4].

Most of the development and evaluation research on buprenorphine has based on daily doses. Our study used similar doses and found same results. Patients on low dose methadone report wide range of side effects, especially during early days when their daily dose of methadone is being stabilized. In new orleans, for example, Dr. William gave 209 patients on methadone a check list of 33 assorted symptoms ranging from runny nose to loss of appetite and asked them to check any from with they suffered as might be expected, this highly suggestive procedure produced a bumper of reported symptoms [14]. Avram[15] carried out similar study of side effects in 206 methadone patients. This study of side effects but led to rather reassuring conclusions. Effects based buprenorphine or methadone has shown equivalent or better of buprenorphine reductions in heroine addiction. It fined better buprenorphine (2 mg) than low dose methadone (20 mg) but methadone dose may not be optimal. The significant differences between two groups may be are due to pharmacological differences because buprenorphine is along acting partial opioid agonist, is that it partially mitigates withdrawal symptoms and signs[2]. In this study, because of some limitations, neither elimination rate and path nor detoxification site were measured. Evaluation of these factors is suggested in complementary studies.

In summary buprenorphine was more effective than low dose methadone in reducing withdrawal signs and

Table 1: Comparison between group according withdrawal symptoms and signs

	During administration		3 days after completing administration	
Symptom or sign	Methadone (%)	Buprenorphine (%)	Methadone (%)	Buprenorphine (%)
Anorexia	15.0	20.0	14	22
Abdominal pain	10.0	45.0	18	30
Insomnia	8.0	15.5	17	50
bone pain	15.0	26.5	20	70
Mydriasis	2.5	2.5	70	97
tendency to use drug again	2.5	8.0	5	15
Sweating	10.0	18.0	17	23
Rhinorrhea	10.0	20.0	10	34
Vomiting	2.5	3.5	4	57
Restlessness	2.5	10.0	11	64
Weakness	12.0	12.0	12	25
pulse rate increasing	0.0	0.0	0	24
respiratory rate increasing	0.0	0.0	0	16
blood pressure increasing	0.0	0.0	0	16

symptoms in heroine dependence. According to this finding suggested the use of buprenorhphine for heroine addiction treatment.

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