PROPOFOL ANAESTHESIA IN DONKEYS IN

COMBINATION WITH XYLAZINE

Ismail, S.F ; Abd Al‐Galil, A.S.A and Gehan, B.A.Youssef

Dept. of Surgery, Anaesthesiology and Radiology, Faculty of Veterinary Medicine Benha University.Egypt. P.O.13736

Drgehan222@yahoo.com

ABSTRACT

This study was aimed to identify the anesthetic effects of propofol as intravenous anesthetic solution in donkeys with other anesthetic and analgesic agents (xylazine), on heart rate, respiratory rate and the temperature, and also its effects on blood parameters blood pictures, liver and kidney function testes. The present study was carried out on Fifteen donkeys (of both sexes), collected from the suburban of kalyobia governorates were used as an experimental model . using xylazine before propofol, it characterized by sedative action and the induction of the

anesthesia was more rapid and the animals showed no excitation, with decrease in the respiratory rate. The recovery was rapid and smooth with no complications.

INTRODUCTION

Propofol is an alkyl phenol derivatives ( 2, 6 di‐iso‐propyl‐phenol). Only slightly soluble in water and commercially present as an aqueous emulsion containing propofol ( 10mg / ml ), glycerol (100mg/ml), soya bean oil ( 22.5 mg/ml), egg lecithin (12mg/ml) and sodium hydroxide to adjust PH.

(Branson and Gross, 1994). While Xylazine is one of alpha2- adrenoreceptor agonists which used in horses to produce deep sedation after a few minutes of its intravenous administration. One of the most common propofol combinations is propofol and xylazine. Xylazine

can be used for premedication before both intravenous anesthesia and before induction and maintenance with inhalant agents.(Taylor , 1985).

Propofol is non barbiturate and relatively non cumulative intravenous anesthetic agent with rapid onset and recovery. It produce smooth induction with possibility of maintenance by intermittent injection

( Muir et al.,2007).Oku, Yamanka, Ashihara , Kawaska , Mizuno and Fujinaga (2003)stated that the low dose of Propofol (1mg/ kg)after xylazine premedication resulted in a poor anesthetic action while the high dose of propofol (4 mg/ kg) produced an excellent quality of induction and excitement free recovery. Oku, et al. (2005) reported that, the most common advantages of premedication with xylazine in horses were the reduction and the prevention of excitation during the induction of anesthesia with propofol and elongation of anesthetic period, while the most common adverse effect was the respiratory depressant effect. Matthewes and Taylor (2002) studied the anesthesia in miniature donkeys and found that xylazine-propofol produced good anesthesia in miniature donkeys but the duration was quite short (< 10 minutes), however, anesthesia can be maintained with additional propofol (0.2 mg/ kg/

minute) .

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MATERIALS AND METHODS

The present study was carried out on 20 donkeys. Collected from the suburban of kalyobia governorates were used as experimental model .The animals were apparently healthy and their ages and body weights were ranged from 3‐4 years and 120‐150 kg respectively. These animals were collected to investigate the pilot efficacies of propofol alone as well as propofol combination with other anesthetic drugs, according to their physiological, hematological, and neuromuscular effects.All animals were fasted for about 12 hours and freely given water before being investigated.

These investigations were classified into two main parts Before each injection, the jugular vien was cannulated on disinfected clipped skin, the weight of the animal was estimated and the dose of each anesthetic drug was calculated.The clinical signs of the anesthetic regimen including: assessments of its analgesic effect, duration of its action as well as the time of its recovery were recorded. The effect of the regimen on the heart and respiratory rates as well as the body temperature were also measured and tabulated. They were recorded before each injection (0.0 time) and

at 5, 10, 20, 30, 60, 120, 180 minutes after injection. The anesthesia of each regimen was maintained for 30 minutes and the animals were put

under observation recording the physiological and the clinical changes until the animals become in the sternal and then in the standing position.

A catheter was inserted in the other jugular vein for blood sampling. The blood samples were obtained before injection of each regimen (0.0 time) and at 15, 30, 60 minutes and at 24 hours for the estimation of blood picture, as well as for liver and kidney function tests. The animals were injected intravenously with xylazine HCL 2% in dose of 1mg/kg body weight. Once the animals become sedated, the initial dose of Propofol 2mg / kg body weight was also injected and then it maintained by intravenous infusion of propofol in a dose of 0.2mg / kg body weight/ minute diluted in 5 % dextrose in ratio of 1:4 respectively

RESULTS

Five to seven minutes following intravenous injection of 1 mg/kg body weight of xylazine, the signs of sedation begin to appear on the injected animals. The animals head was markedly lowered, the external ear conchea as well as the lower lips were dropped and the animals

appeared unaware from their surrounding.the induction of anesthesia occurred rapidly within 22.5 minutes after intravenous injection of

propofol (2 mg/kg body weight) premedicated with xylazine.The signs were copies lacrimation, descending lips and dropping of the upper eye lids. Prolapse of the penis was recorded in two animals of that group.

All body reflexes disappear 5 minutes after injection except lacrimation which persist up to the recovery time . Complete analgesia and sedation was achieved at 5 minutes after injection where the animals showed no responses to any painful stimuli. The heart rate showed non significant increase from the base line value as shown in table 1.The respiratory rate

showed significant decrease 20 minutes after injection (without apnea) then returned back 2 hour after injection. As shown in table 1.The body temperature showed non significant decrease at 1 hour after injection as shown in table 1.Both of the pedal and anal reflexes was appeared at 30 minutes after injection. The recovery of the animals was very smooth, excitement free (without struggling or tremors) and of good quality, the animal tried to stand and then stand alone without help. The complete recovery of the animals occurred at 35 minutes.

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Table (1 ): Showing the changes in the parameters of the heart rate, respiratory rate and body temperature on the animals given propofol / xylazine in group IITime/ minute

parameters

0

5

10

20

30

60

120

180

Heart

rate

61

±1

.7

3

69

.3

3

±1

1.0

2

67

.6

7

±1

0.7

9

58

.6

7

±6

.4

3

57

.6

7

±6

.3

5

56

±7

.5

5

57

±3

.6

1

58

±2

.6

5

Respir

atory

21

±2

.0

0

19

±1.

00

16

.6

7

±5.

86

16

.3

3

±4

.7

3

16

.6

7

±4

.9

3

17

±1

.7

3

17

.6

7

±0

.5

8

18

.6

7

±1

.5

3

Temp

eratur

e

37

.9

7

±1

.0

2

37

.3

7

±1.

55

37

.2

7

±1.

53

37

.0

3

±1

.3

4

37

.1

±0

.9

6

36

.8

3

±0

.7

2

36

.9

±0

.3

5

36

.9

3

±

0

.2

1

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Table (2): Effect on blood picture samples ( RBCs, WBCs, Hb and PCV) on animals given propofol /

zylazine in group II

Time

Parameters

0

15

30

60

24h

RBCs

7.74

±

0.77

7.54

±

0.62

7.48

±

0.92

6.93

±

0.91

6.97

±

0.91

WBCs

6.37

±

0.58

6.21

±

0.58

6.02

±

0.71

6.04

±

0.81

5.91

±

0.80

HB

12.41

±

1.85

12.22

±

1.64

11.96

±

1.53

12.06

±

1.73

11.81

±

1.78

PCV

39.33

±

1.53

36.67

±

0.58

36.00

±

1.73

37.67

±

2.08

35.33

±

1.15

360

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Table (3): Effect on liver and kidney functions of animals given propofol / zylazine in group II

Time

Parameters

0

15

30

60

24h

GPT

21.00

±

2.65

19.33

±

2.89

17.67

±

0.58

18.00

±

3.00

18.33

±

1.15

GOT

2.44

±

0.29

2.31

±

0.25

2.30

±

0.29

2.

29

±

0.16

2.25

±

0.28

Cholesterol

73.33

±

7.02

75.00

±

6.56

69.33

±

8.02

67.67

±

6.51

71.33

±

7.64

Creatinin

1.52

±

0.11

1.41

±

0.27

1.31

±

0.02

1.35

±

0.15

1.30

±

0.09

Total

protein

7.00

±

0.52

6.70

±

0.53

6.62

±

0.64

6.66

±

0.32

6.64

±

0.37

Glucose

100.33

±

2.52

9

4.67

±

7.57

93.33

±

8.96

96.00

±

8.66

87.67

±

5.77

Urea

16.33

±

3.06

14.33

±

2.52

14.33

±

1.53

15.33

±

2.08

13.67

±

2.31

Albumin

2.70

±

0.28

2.70

±

0.10

2.60

±

0.22

2.55

±

0.20

2.56

±

0.20

A/G

0.62

±

0.05

0.68

±

0.09

0.65

±

0.13

0.62

±

0.06

0.63

±

0.07

361