Indications for and outcome of blood transfusion in dogs in a multi disciplinary referral practice

Ragnhild Skulberg, Stephen J Baines, Jane Eastwood

Willows Veterinary Centre and Referral Service, Solihull, West Midlands, UK

INTRODUCTION

Canine blood products are more available since the 2007 launch of Pet Blood Bank UK. Increased awareness of benefits is balanced against costs and risks involved in transfusion. The decision to transfuse made by clinicians is based on patient assessment, influenced by personal experience.

OBJECTIVES

Report indications for and outcomes of blood product transfusion.

ANIMALS

151 client-owned dogs.

METHODS

Retrospective case series of dogs receiving blood products, August 2009–November 2013. Indications for transfusion and outcome (survival vs non-survival) were recorded.

RESULTS

151 dogs received transfusions: 29 ME, 44 MN, 17 FE, and 61

FN. Median age was 78 months (3–183). Common breeds were Labrador (18 dogs), Cocker Spaniel (14 dogs), Springer Spaniel (8 dogs), Jack Russell Terrier (7 dogs) with 87 dogs in other breeds and 17 crossbreeds. Indications were medical diseases (133 dogs) including immune mediated (75 dogs), gastrointestinal (20 dogs), neoplastic (17 dogs), septic (5 dogs), coagulopathic (8 dogs), and nasal disease (4 dogs), haemoabdomen (2 dogs), trauma (2 dogs), and surgical blood loss (18 dogs).

Transfusions included PRBCs (154 dogs), whole blood (50 dogs), FFP (13 dogs), cryoprecipitate (3 dogs), and autotransfusion (1 dog). Recipient blood type was known in 90 dogs: 1.1–ve (42 dogs) and 1.1+ve (48 dogs). Cross-matching was performed in 24 dogs. Number of transfusions was: one (103 dogs), two (34 dogs), three (8 dogs), four (4 dogs), or five (2 dogs). Median PCV (%) / TP (g/dl) was 15/52 pre-transfusion and 25/56 post-transfusion. Median absolute increase in PCV (%) / TP (g/dl) was 10/2. No major transfusion reactions were reported.

Median hospitalisation was 3 days (1–15) overall and 2 days (1–11) post-transfusion. 117 (77.5%) dogs were discharged at a median of 3 days (1–15). Causes of death were cardio-pulmonary arrest (11 dogs), clinical deterioration (8 dogs) and euthanasia at owners request (15 dogs). There was no difference between dogs with medical diseases or surgical blood loss in survival rate (78.2% vs 72.2%, $P=0.556$), cause of death ($P=0.300$) or blood product received ($P=0.230$), but there were significant differences in PCV/TS pre- and post-transfusion ($P<0.001$ – 0.0076). Survival was not associated with number of transfusions ($P=0.525$) or type of medical disease ($P=0.181$), but was associated with PCV post-transfusion ($P=0.014$).

CONCLUSIONS AND CLINICAL IMPORTANCE

77.5% dogs survived, supporting use of blood products in veterinary practice. Non survival was due to primary disease not transfusion complications.

Evaluation of red blood cell distribution width in canine septic peritonitis

Alexander Forward, Giacomo Stanzani, Stefano Cortellini, Lindsay Kellett-Gregory

Royal Veterinary College, London, UK

BACKGROUND

Canine septic peritonitis is a challenging condition with a reported mortality rate range of 27–80%. Prognostic factors for such conditions enable owners to make informed decisions with regard to continuing care and also help to heighten clinicians' awareness of critically ill patients. Red blood cell distribution width (RDW), a quantitative measure reflecting the variability in size of circulating erythrocytes that is routinely

reported as part of complete blood counts (CBC), has recently been suggested to be a prognostic indicator in a number of human conditions, including sepsis.

OBJECTIVE

To investigate the association of RDW and other laboratory variables with all cause mortality in dogs with septic peritonitis.

DESIGN

Retrospective, study conducted at a teaching hospital.

ANIMALS

Sixty client-owned dogs with septic peritonitis

METHODS

Electronic records were searched and analysed for cases that underwent surgery for the treatment of septic peritonitis in the

Guest (guest)

IP: 3.80.253.173

On: Wed, 26 Apr 2023 05:55:35

period 2007–2013 and had a CBC performed on admission. The demographic data and admission laboratory variables were compared between survivors and non-survivors. Correlations between laboratory variables were investigated. Receiver operating curve (ROC) analysis was performed. A multivariable logistic regression model was performed to determine the effect of RDW as an independent prognostic indicator.

RESULTS

Mortality in the study population was 41.7% (25/60). The mean $\pm$ SD RDW was significantly higher in non-survivors (16.38 ± 1.32) than survivors (15.45 ± 1.03) ($p = 0.004$). The RDW had a significant positive correlation with lactate ($r = 0.342$, $p = 0.008$) and with haematocrit (HCT) ($r = 0.538$,

$p < 0.0005$). A ROC analysis of RDW for predicting non-survival yielded an area under the curve of 0.70 with a cutoff of 16.65 being 89% specific but only 40% sensitive for non-survival. When RDW, HCT and lactate were entered into a multivariate model, only RDW, retained a statistically significant association with mortality ($p = 0.036$ for RDW).

CONCLUSION

An elevated red cell distribution width is associated with all cause mortality in dogs with septic peritonitis. Further investigation is needed to allow the clinically relevant use of RDW as a novel predictor of mortality in patients with septic peritonitis and investigate the mechanism behind this association.

Analgesia for cats after ovariohysterectomy with either buprenorphine or methadone administered in a 'quad' combination: to develop best practice for cat shelter neutering programs

**Christine Pye¹, Emma Stevenson¹,
Rebecca Dunn¹, Polly Taylor²,
David Yates¹**

¹ RSPCA Greater Manchester Animal Hospital, Salford, UK
² Taylor Monroe, Cambridgeshire, UK

Effective neutering programs and performing pre-pubertal neutering can help to control the number of stray, unwanted and abandoned cats, therefore enhancing cat welfare. The use of a medetomidine-midazolam-ketamine-buprenorphine "quad" protocol, developed at the RSPCA Greater Manchester Animal Hospital (GMAH) has been previously described for use in such programs. This study aimed to compare that protocol with one consisting of medetomidine-midazolam-ketamine and methadone, and to see whether there was any significant difference in post operative pain in cats undergoing ovariohysterectomy.

One hundred female cats (age 2–86 months) admitted to the RSPCA GMAH for ovariohysterectomy were included in a

blinded, randomised clinical trial, and allocated to one of two groups. Group A were anaesthetised with an intramuscular injection of 50mg/m² ketamine, 2.5mg/m² midazolam, 500µg/m² medetomidine and 5mg/m² methadone. Group B received 60mg/m² ketamine, 3mg/m² midazolam, 600µg/m² medetomidine and 180µg/m² buprenorphine. All cats also received 0.3mg/kg meloxicam. Anaesthesia was supplemented with isoflurane (0.5% inspired) mixed with oxygen. All ovariohysterectomy surgeries were carried out by the same veterinary surgeon, who was blinded to the anaesthetic used. All cats were reversed with atipamazole one hour after induction.

Cats were pain scored by one RVN (who was also blinded to the anaesthetic used) pre-operatively, and 2, 4, 8 and 24 hours post operatively using a simple descriptive scale (from 1–5), the Colorado State acute pain scale (0–5) and by measuring the mechanical nociceptive threshold (MNT; force, N) close to the surgical site with a pneumatic probe (Prod, Topcat Metrology). Heart and respiration rates were measured pre-operatively, and at 5 minute intervals during surgery.

Data was analysed using appropriate statistical tests, including students t-tests, and mixed between-within group ANOVA. Statistical significance was $p \leq 0.05$.

There was no significant difference between the groups in age, body weight and surgery time. In general, pain scores were not statistically different between the groups. HR and RR were significantly lower intraoperatively than pre-operatively for both groups, but there was no significant difference between groups for both pre-op and intra-op HR and RR. Pain scores were low for all cats, and none required rescue analgesia.

Both anaesthetic protocols provide adequate post-operative analgesia following ovariohysterectomy in cats.