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Drowning of Pet Owners during Attempted Animal Rescues: The AVIR-A Syndrome

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Cover Page Footnote

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Abstract

The rescuer who drowns can result from the attempted rescue of a human or an animal. We report here a total population analysis of all drowning fatalities for the 14-year period 1–July-2002 to 30-June-2016 which involved an attempted rescue of an animal. Cases were drawn from the Royal Life Saving National Fatal Drowning Database, which in turn, derived its data primarily from the National Coronial Information System (NCIS). Eight people drowned, all adults (ranging in age from 19-74 years), in the attempted rescue of an animal. Seven of the animals were domestic pet dogs, and in two cases farm animals. Six of the eight fatalities occurred in inland waterways. The AVIR-A syndrome, the 'Aquatic Victim Instead of Rescuer– Animal' (AVIR-A) drowning syndrome, is a subset of the AVIR drowning syndrome. Environmental design and regulation are unlikely to prevent this type of fatality. Public awareness, with emphasis on non-contact rescue training should be the approach taken.

Keywords: drowning, animal, rescue, ethics, pet, advocacy

Introduction

Experiencing a pet or farm animal drown in a water hazard is distressing. In many communities, some 62% of families have pets (Animal Medicines Australia, 2016). Many such pets are assigned anthropomorphic qualities (Butterfield et al., 2012) and often are regarded as members of a human family. Farmers and livestock owners are renowned for caring for the welfare of the animals in their care. Those who care for animals are distressed if an animal is injured or is caught up in acute mortal risk. In extreme cases, owners act impulsively and sometimes with great courage in attempts to rescue a pet from life-threatening danger. Just like their human owners, many domestic pets live and recreate near potential water hazards.

In our previous research, we have described in detail the tragic circumstances of the 'Aquatic Victim Instead of Rescuer (AVIR) syndrome' (Franklin & Pearn, 2011). In that syndrome, usually the primary victim is a child or family member, who survives while the rescuer drowns (Franklin et al., 2019; Turgut & Turgut, 2012). We have identified an important subset of this syndrome, in which the potential primary victim is not a child, but a family pet or farm animal. We describe this as the 'Aquatic Victim Instead of Rescuer – Animal' (AVIR-A) syndrome.

In the AVIR-A, the primary victim is not a human, but an animal. The intending rescuer perceives himself or herself to have an obligation (duty) – one of moral responsibility of care and protection; and one often of deep emotional bonds (Hedberg, 2016). In the cases described in the current study, the attempting rescuer was always the sole adult in the animal-drowning scenario, and the impulse to enter the water was one of instinctive altruism. Such makes approaches to prevention difficult.

The human AVIR syndrome is featured regularly in newspaper reports from many countries (Franklin & Pearn, 2011). In 90% of cases, the rescuer drowns as the result of an altruistic and instinctive impulse to save a drowning victim's life. More than 103 cases have been reported from Australia alone, in such cases, three quarters of the primary victims survived (Pearn & Franklin, 2012).

A rescuer who drowns going to the aid of a stricken pet or livestock animal is occasionally reported in the media (Bevan, 2018). Case reports describe a caring and altruistic individual who attempts to rescue a domestic pet or livestock animal from a water hazard such as a dam, river, irrigation trench or watercourse in flood (Trigg et al., 2017). Animals drown during floods, either entrapped in pens or stalls, or engulfed in rising water which transforms high-ground sanctuary to a lake. Animals who fall into raging watercourses are swept into midstream. In moving water, such as in a flooded river, the strength and rate of flow is strongest in the midstream (Connolly, 2014). This differential rate creates a Bernoulli hydrostatic differential, with a vector force inducing a helical flow towards the centre, where the flow is fastest. Flood disasters may also cause large loss of livestock due to drowning. Although the incidence is unknown, the most recent (2019) flooding event in Queensland, an estimated 500,000 cattle drowned in floodwaters (Smee & agencies, 2019).

The peer-reviewed veterinary literature on accidental drowning of animals is scarce (McEwan & Gerdin, 2018). Although veterinary surgeons may encounter drowning animals following floods, the published evidence is limited to case reports (Benson et al, 2013; Heffner et al, 2008). Similarly, while previously published research has explored the use of animals as rescuers in a drowning scenario (Mott, 2003; Avramidis & Avramidis, 2005; Avramidis & Avramidou, 2008), the issue of people drowning during an attempted rescue of their pet or animal has received scant attention.

In our broader field of drowning prevention and safety promotion, we highlight the importance of syndrome specificity. All who work in drowning prevention are aware that preventative approaches are successful only if they are targeted at specific drowning syndromes (Pearn, 2001). To this end, this study aims to describe the syndrome of the rescuer who attempts to save a stricken animal; and in so doing, places them self in mortal risk. We report here a total population survey and analysis of this tragic syndrome; with a review and examples of all drowning fatalities which involved the attempted rescue of a domestic or farm animal.

Method

This research is a retrospective, total population survey and analysis of all drowning fatalities for the 14-year period 1 July 2002 to 30 June 2016, which involved the attempted rescue of a domestic or farm animal. Cases were drawn

from the Royal Life Saving National Fatal Drowning Database (Royal Life Saving Society – Australia, 2019). This Database, in turn, derives its data primarily from the National Coronial Information System (NCIS) (Victorian Department of Justice and Community Safety, 2018). The development of the database has been described in detail elsewhere (Peden et al., 2016; Peden et al., 2017). In brief, drowning is considered a sudden and unexpected death which, in Australia, necessitates its report to, and investigation by, a coroner. All deaths are entered onto the NCIS with variable documentation (demographics, coroner's report or inquest report, autopsy report, toxicology report and police report) available once the case is closed and no longer under investigation by a coroner. This allows for rich detail on causal factors associated with drowning fatalities to be interrogated for the purposes of prevention.

The seasons of incident were coded to southern hemisphere seasons experienced in Australia: Summer (spanning December, January and February); Autumn (March, April, May); Winter (June, July, August); and Spring (September, October, November). Time of day of drowning incident was coded as Early morning (12:01am to 6am); Morning (6:01am to 12pm); Afternoon (12:01pm to 6pm); and Evening (6:01pm to 12 am). Visitor status was based on distance between residential location and drowning location. Of relevance to this study those coded as 'not a visitor' drowned within 100kms of where they resided and 'intrastate visitor' resided more than 100kms from where they drowned but within the same Australian state or territory. Data presented in this study were correct as of 29 March 2019.

Ethics approval for this study was granted by the Victorian Department of Justice Human Research Ethics Committee (CF/07/13729, CF/10/25057, CF/13/19798). The study was conducted in accordance with the National Statement on Ethical Conduct in Human Research.

Results

We report here a case series of eight victims (Table 1). The eight victims, all adults (ages 19-74 years) drowned in the attempted rescue of an animal. Seven of the animals were domestic pet dogs, and in two cases farm animals. Six of the eight fatalities occurred in inland waterways (rivers, dams, creeks), two of which were flooded at the time. In 50% of cases the person who drowned had a pre-existing medical condition which contributed to the drowning (75% of which were cardiac-related conditions). Similar to the syndrome where the primary victim was a child, but who survived, in this AVIR-A series, 25% of the animals which triggered the attempted rescue also survived.

Table 1
Case series of unintentional fatal drowning associated with attempted rescue of an animal

Case number	Age group of rescuer	Primary victim	Aquatic hazard location	Time of day	Season	Visitor status
1	35-44	Dog	Beach	Afternoon	Winter	Intrastate visitor
2	18-24	Dog	River	Afternoon	Spring	Not a visitor
3	25-34	2 x Dog	Dam	Morning	Spring	Not a visitor
4	65-74	Dog	Creek (flooded)	Afternoon	Winter	Not a visitor
5	55-64	2 x Dog & Sheep	Dam	Afternoon	Spring	Not a visitor
6	55-64	Dog	Creek	Morning	Spring	Not a visitor
7	35-44	Dog	Beach	Morning	Winter	Not a visitor
8	65-74	Farm animal	River (flooded)	Morning	Summer	Not a visitor

Note: Australia, 1 July 2002 to 30 June 2016

Four illustrative cases based on an amalgam of NCIS and media reports are given as examples of this syndrome:

Case 1
An older farmer was walking two dogs in the farm paddock. One dog slipped its lead and gave chase after a sheep which tried to escape by running into a dam. The dog followed. The owner, who could not swim, undressed and entered the water both to rescue the sheep and recover the dog. The farmer submerged and failed to surface. Subsequently, police rescue divers recovered the farmer's body.

Case 2
A farmer successfully led one of their farm animals to safety from rising floodwaters. The farmer returned to save another two farm animals, but whilst leading them to safety, the river banks collapsed and the farmer was swept away in the raging floodwater. After a prolonged search the farmer's body was recovered 300m from the site of the attempted rescue.

Case 3
On a fine morning, a person, described as "not a very good swimmer," was walking their two dogs along a beach, also playing with dog toys for their dogs.

One of the dogs entered the water, but became distressed. The victim kicked off their shoes and entered the water but submerged and was found floating face down in the water. The body was found two hours later, some 400m from the shoreline. Tragically, when adults returned to the victim's car, they found the other dog had returned to the parked car and was awaiting its owners return.

Case 4

A known asthmatic was walking their two unleashed dogs beside a rural river. Both dogs ran into the water and would not return. Their owner swam out some 15m but suffered an acute asthmatic attack. A rescuer came to the dog owner's aid, but both victim and rescuer became entangled in water weeds. The owner of the dogs drowned. Attempts at CPR were unsuccessful.

Discussion

Prevention measures must be targeted at specific drowning syndromes to have the best chance of being effective (Pearn, 2001). This study reported a hitherto little researched area of drowning and its prevention, namely the syndrome of the rescuer who drowns while attempting to save a stricken animal. This study identified eight rescuers-turned-victims over a 14-year period, all adults, who, in 88% of the reported cases, drowned while rescuing a dog. The drownings most commonly occurred in inland waterways (i.e. rivers, creeks and dams (75%)), followed by beaches (25%).

This study reports a variation (i.e., AVIR-A) of the previously reported AVIR syndrome (Franklin & Pearn, 2011; Pearn & Franklin, 2012) where the rescuer drowns in the attempted rescue of a child or family member. In the AVIR-A syndrome, the primary victim drowns while attempting to rescue a family pet or farm animal. There are important similarities and differences between the two which informs prevention efforts.

Similar to the AVIR syndrome where the primary victim commonly survived (Franklin & Pearn, 2011; Pearn & Franklin 2012), so too does the animal in the AVIR-A series, albeit in lower proportions. While in 93% of AVIR syndrome incidents involving children the primary victim survived, in only 25% of cases in the AVIR-A series, the animals which triggered the attempted rescue also survived.

With respect to the differences between the two syndromes, first, the age profiles of the rescuers who drowned differed markedly, with 8% of deaths associated with the AVIR syndrome being aged between 55 years or older (Pearn & Franklin, 2012) compared to 50% of AVIR-A syndrome victims in the current study. The proportion of cases occurring at inland locations such as rivers, creeks and dams was much higher in the AVIR-A syndrome (75%) compared to 35% among AVIR syndrome victims (Pearn & Franklin, 2012). Additionally, just 13% of rescuers who drowned in AVIR-A syndrome cases

were unfamiliar with the aquatic location at which they drowned (i.e., a visitor), compared to 50% of victims in AVIR syndrome cases (Pearn & Franklin, 2012).

Targeting prevention efforts to animal owners and highlighting the risks to both animal and owner may be another way of raising the awareness around drowning prevention strategies. Appealing to the owner's love of their animal may prove to be a 'teachable' opportunity to reduce drowning risk in that owners would see a perceived benefit not only for themselves but for their cherished animals (Nutbeam et al., 2010).

The victims of the AVIR-A syndrome depicted in the four illustrative case studies typify two different groupings; namely farmers (see Case Studies 1 and 2) and domestic pet owners (see Case Studies 3 and 4). While their reasons for caring for animals may differ, the recommendations for preventing drowning in either case are similar. Based on our findings, we recommend that pet or animal owners who frequent aquatic locations or who reside in areas prone to flooding should consider training in animal rescue (Dworkin, 2008). This training should be specific to the aquatic environment where the pet/animal and their owner are exposed as well as being applicable to the behavioural, physical, and physiological differences among the species (Hainsworth, 1981). Such training may be provided by accredited organisations such as the Royal Society for the Prevention of Cruelty to Animals (RSPCA), the Royal Humane Society, or emergency response and drowning prevention organisations.

Additionally, we posit that every citizen should be trained in first aid and basic rescue techniques. The preventive approach must be two-fold. First, occasional pulsed public awareness campaigns ought to be promoted. Second, training for all potential bystanders in basic lifesaving techniques should occur. Advocacy to reduce the rate of all forms of drowning must be directed primarily towards education, safety design, and legislation (Pearn et al, 2008).

The basic principles of bystander lifesaving (hitherto for human victims in the water) are to attempt a non-contact rescue. The universal lifesaving adage is 'Talk, Reach, Throw, Wade, Row, Swim, and Tow' (Royal Life Saving Society – Australia, 2010). In parallel with the human situation, the only option is basic training in lifesaving such that when one is confronted by a drowning victim, one's altruistic and courageous impulse to enter the water is supplanted and the first action is to affect a rescue without placing the rescuer in mortal risk. While the first step in this adage, "Talk," may be more challenging when the primary victim is an animal, it remains a vital step to reduce risk to the rescuer. In some instances, animals may be able to extricate themselves from danger without the rescuer needing to enter the water. Other methods to avoid entering the water may include rescue hooks (Dworkin, 2008) such as those used in ice rescues and ropes, for example. In two cases in the current study,

more than one animal was involved, which further complicated non-contact rescues.

In half of the cases of an AVIR-A syndrome drowning, the victim had a pre-existing medical condition. In 75% of these cases, the condition was cardiac-related such as coronary artery atherosclerosis, hypotension, or cardiomegaly (which is likely linked to the older cohort in this study) with the remaining condition being asthma (see Case Study 4). Pre-existing medical conditions (Franklin et al., 2017), including cardiac conditions (Claesson et al., 2013; Mahony et al., 2017) are known to increase drowning risk. Given the significantly older profile of the AVIR-A syndrome victims, when compared to AVIR syndrome victims, encouraging medical check-ups and increased counselling on the risks associated with conducting an aquatic rescue with a pre-existing cardiac condition would be prudent. Conveying the importance of this message to those who were unaware of their pre-existing medical condition is significantly more challenging, but nevertheless further reinforces why self-preservation in any rescue is key (Franklin et al., 2019).

Similarly, one quarter of AVIR-A syndrome related drowning deaths examined in this study involve inland waterways in flood (see Case Study 2). While non-contact rescues are preferred to reduce drowning risk, they are of even greater importance where floodwaters are involved. Flood rescues are typically performed by skilled operators (Keech et al., 2019) and although laypersons have reported voluntarily entering floodwaters (Peden et al., 2019), they are often deadly (Jonkman & Kelman, 2005). Studies have shown people often underestimate the danger that floodwaters can pose (Franklin et al., 2014; Hamilton et al., 2016), highlighting the need for strategies to increase public awareness of the dangers of floodwaters and strategies to better assess risk.

Strengths and Limitations

There are several strengths of this study. One such strength was that it was a total population study which reported analysis of a unique data set. Though this specific topic is a unique area of drowning prevention which has not previously been researched, the topic explored represents part of a larger group of drowning risk factors and also presented an additional opportunity for educating people about aquatic safety. The data explored within this study were coronial data which allowed for rich exploration of causal factors to guide prevention. There were, however, limitations associated with this study. One limitation was that the quantitative risk cannot be determined because the denominator (on necessity, also including successful rescues which were never reported) was unknown. Due to ethical constraints associated with the use of coronial data, some demographic data has been concealed to avoid identification of the person who drowned.

Conclusion

The prevention of drowning, not least in this tragic syndrome of 'rescuer' fatality, is the responsibility of all members of the community. Veterinarians and human physicians are potentially confronted by the potential risks of such fatalities. We applaud altruism and promoting enlightened altruism informed by simple training ought to reduce the incidence of such tragedies in the future. Preventive healthcare, in the aquatic domain, is the responsibility of us all.

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