

Experiences with sick and injured bats.

As the public image of the bat improves, it is inevitable that there will be an increase in reports of sick and injured bats. It frequently falls to the local bat group to deal with these cases. Very occasionally we are met with "Get that horrible thing out of here!" but normally the sight of such a helpless creature in distress brings out the best in people and a lot of goodwill can be created by follow up phone calls to report the patients progress.

Causes

Often the reason for the bat being found remains unknown, but the following are some of the causes of sickness or injury.

- a) Domestic cat. i) Primary. Some cats find a vantage point close to the roost access and catch bats as they emerge.
- ii) Secondary. Sick or injured bats on the ground are easy prey for the cat.
- b) Motor car. Some species feed along roads, eg Natterer's bat *Myotis nattereri* on country lanes.
- c) High winds and sudden storms. Young, inexperienced, weaker-flying juveniles may be more susceptible.
- d) Baby bats falling from the roost before they can fly, some may be retrieved by the mothers.
- e) Disease. Little is known about viruses and bacteria affecting bats but blood parasites and heavy ectoparasite infestations have a debilitating effect.
- f) Poisonings. Woodworm treatment and agricultural sprays.
- g) Deliberate or accidental injury by human beings. During building repairs or demolition bats may be accidentally injured and unfortunately a few people with a horror of them attempt to kill them.

Injuries

The condition of the rescued bat can vary from tired and hungry to fatally injured. Some animals with no apparent external injuries may have internal injuries or may be affected by diseases or poisoning. This is the most difficult group to deal with, as investigation requires expensive laboratory facilities and a large number of sick bats on which to perform tests.

The most common injuries seen are fractures of the radius-ulna and the humerus. Because of the structure of the wing these pose unique problems in repair. Other fractures seen are of the legs, digits, skull, jaw and spine. The delicate wing membranes can be torn by cats or by flying into sharp objects, thorn hedges or thistles. Serious internal injuries are seen at post mortem these include crushed chests, abdominal rupture and haemorrhages.

Treatment

The assessment of the seriousness of the injuries requires veterinary knowledge and experience. If the initial examination reveals injuries such as spinal fracture, or fracture of major bones in both wings, in my opinion euthanasia should be performed immediately. If no injuries

are found, or those present can be treated, good nursing is the first priority and in some cases the only treatment necessary. Injured wild animals should be handled and distressed as little as possible. Because of the very large surface area compared to their mass, dehydration in bats is very rapid, so fluid therapy is important. Various solutions can be given by injection, but as bats normally drink readily, milk or water given by mouth is safest. Food can be offered, but I don't usually force feed for the first 24 hours. The optimum temperature for injured bats is a matter of debate but mine seem comfortable at about 20°C.

Only if the injury is causing a lot of distress is it treated immediately, eg. some fractures become twisted when the bat moves. Better results are obtained by allowing 24-48 hours to recover from shock and readjust the fluid balance.

Anaesthesia can be achieved successfully with halothane and oxygen, 2-4% for induction. Then 1/4-2% for maintenance depending on the size of the bat. Simple splints can be applied without anaesthesia, but suturing, more complicated splints and pinning require anaesthesia.

Torn membranes may be sutured with fine nylon and very good results obtained, however, quite extensive tears in membranes will heal without suturing but this can take several weeks or months.

Immobilization of fractures of the wing is extremely difficult. As the membrane includes all the bones of the forelimb, and also attaches to the side of the body and hindlimb, it is impossible to enclose the humerus or forearm in the type of cast or splint used for human beings. However, it is possible to splint the radius/ulna by including the digits which then act as a secondary splint. Various materials can be used including match sticks, cocktail sticks, fine rigid wire, various sorts of adhesive tapes, including cellotape, and sutures. Some of these are very successful but many are deftly removed by the patient in a fraction of the time taken to apply them!! Some people recommend collars to prevent this interference but bats are equally adept at demolishing these! Unfortunately this leads to poor healing and false joint formation.

A second approach to immobilization of fractures is by pinning, which involves placing a stainless steel rod or pin inside the hollow limb bone. This is obviously a job for a veterinary surgeon. The small size excludes the use of commercially produced intramedullary pins, but hypodermic needles and Kirschner wires can be adapted. Pinning of the humerus could produce good results, but in the case of the radius/ulna, damage to the carpal joint is almost inevitable, leading to a limb useful for climbing but not flight. The comparatively large size of the wing frequently leads to rotation of the distal fragment on the pin. A splint applied after surgery will reduce the risk of rotation.

Another problem with fractures is that they are