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### Fracture-Dislocation of Lumbar Spine occurring 'Spontaneously' in Rabbits A. L. STIFF and F. J. C. ROE, Cancer Research Dept., London Hospital Medical College.

The sudden onset of paralysis of both hind legs not infrequently occurs in caged rabbits, and most people who have worked with these animals will have encountered the condition. Sometimes the onset coincides with the sudden movement of a rabbit at a time when it is inadequately supported (for example when it is being taken from or returned to its cage). One of us (A.L.S.) has seen the condition arise when a caged rabbit was frightened by a barking dog; and has also encountered it several times in rabbits struggling inside holding boxes. Sometimes the sudden violent movements which predispose to the condition are not actually observed, and a rabbit is found paralysed without the exact time or circumstances of the onset being known.

In all cases of the condition seen by us paralysis has been permanent, and recovery did not occur. The paralysed rabbits if not killed at once, sometimes lived for a while (2-3 weeks) always dragging their hind quarters. However, because of associated loss of bladder and rectal control, and because the animals were unaware

of painful stimuli to the hind leg region, the skin soon became soiled and ulcerated. As a consequence secondary infection set in, and the rabbits rapidly lost condition and had to be killed. It was always assumed that the paralysis was due to a "broken back" with consequent compression of the spinal cord, and in most cases no effort was made to confirm the cause of death at post mortem examination. We thought it would be of interest to report the following typical example together with an illustration, for although the condition may be well-known, it is not well described in the literature.

#### Case History

An adult male albino rabbit weighing 2.8 Kg., was housed by itself in a metal cage measuring 20" x 15" x 15". The grid supplied with the cage was removed because it was found to give some rabbits sore feet; and in its place soft wood shavings were put in the tray. The tray was changed and new shavings provided twice weekly. Diet 18, hay, and water were supplied *ad libitum*.

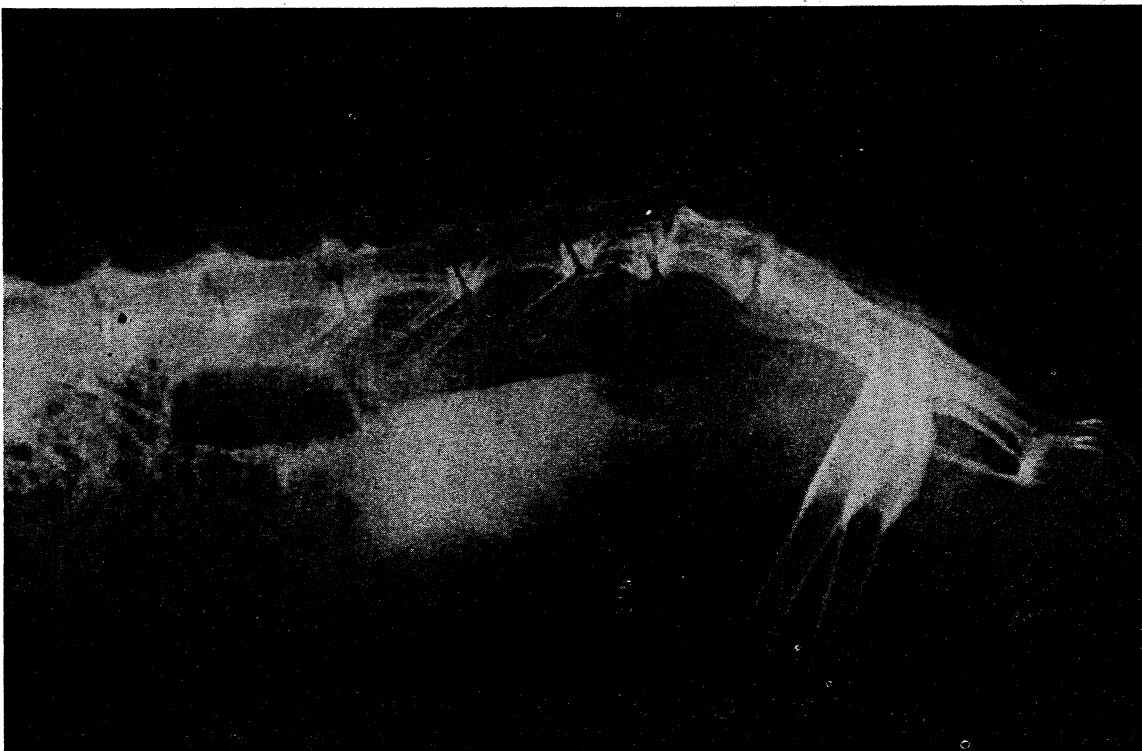


Fig. 1.

The rabbit was one of a group under long-term experimentation. The details of the experiment are not relevant to the present communication, and the general condition of the rabbit up to the time of onset of paralysis was in all respects excellent.

One morning the rabbit was found to have paralysis of both hind legs. The onset of the condition could not be associated with handling or any observed sudden violent movement.

On examination no swelling, deformity or abnormal mobility of the back could be seen or felt. Moreover, palpation of the back and legs did not in any way distress the animal. Intramuscular injection of 100,000 units of penicillin daily for 3 days had no effect on the condition. As the rabbit seemed quite comfortable it was not immediately killed but kept under observation. By the tenth day however the skin of the hind-quarters became soiled with faeces and urine, and by the fourteenth day it was beginning to ulcerate.

At this time radiographs were taken of the spine and these showed quite clearly a fracture-dislocation between the sixth and seventh lumbar vertebrae (see Fig. 1).

The rabbit was then killed. Post-mortem examination confirmed the radiographic findings: the spinal cord had been compressed within the spinal canal by the downward displacement, by  $\frac{3}{8}$  inches, of the seventh lumbar vertebra in relation to the sixth. In addition the sixth vertebra was fractured and there was slight haemorrhage at the injured site. The spinal cord was flattened and softened at the point where it had been compressed. Sections were made of the spinal cord at the site of damage, above it, and below it. These showed generalised severe damage affecting almost the whole cross-section of the cord.

### Discussion

Although "spontaneous" paralysis of the hind legs in rabbits is not uncommon there is very little written about it. Sandford, Wilson and Muir in the UFAW Handbook (1957) consider "spontaneous paralysis" and "broken back" under separate headings.

Goettsch and Pappenheimer (1931) described a form of nutritional muscular dystrophy in rabbits which gives rise to weakness and para-

lysis, particularly in the paravertebral muscles (see Innes and Yevich, 1954, for review). The onset and progress of the condition may be relatively rapid: A rabbit may become completely paralysed and moribund within 15 days of beginning a suitably deficient diet. However paralysis does not appear with the dramatic suddenness associated with spinal injury and it is not necessarily confined to the hind region.

Jabotinsky (1936) reported 3 cases of "spontaneous" paralysis of the hindquarters in rabbits where no spinal injury was present. The cause in these cases remains unknown.

Blount (1945) mentions paralysis in association with broken "back" suggesting that it is a rare condition and one seen only in does.

Joshua (1951) writes that paraplegia occurred "not infrequently in rabbits which made a habit of jumping at the hutch doors", but she does not give a clear picture of the condition.

It is noteworthy, that in the case reported here, paralysis appeared spontaneously, and without known predisposing cause. Moreover no visible swelling, deformity, abnormal mobility, or tenderness of the lumbar spine could be detected despite careful clinical examination. On the other hand a lateral radiograph of the spine revealed the cause of the paralysis beyond all doubt.

Finally it should be emphasised that the injury may occur without any direct blow to the back of the animal: the force of contraction of the animal's own muscles are sufficient. To some extent the condition can be prevented by the correct handling of the animals. The provision of adequate support and the avoidance of sudden frights are the most important factors. A rabbit should *never* be held by the ears alone, nor for more than a moment or so by the scruff of the neck alone, but support under the body should always be given. Particular care is necessary in taking animals from and returning them to their cages, and in the use of holding boxes.

### Summary

A case of spontaneous fracture-dislocation of the lumbar spine in a rabbit is described, illustrated and discussed.

The necessity for supporting rabbits under the body during holding is stressed.

### References

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