Prognosis in the Downer Cow Syndrome

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Summary

The recumbent cow presents many problems to the veterinary surgeon, not least of these is the one of prognosis. Prognosis can never be completely accurate, but it can be determined on average statistics, the signs presented, the continued reassessment of the animal, biochemical enzyme and level changes and the attitude of the stockman.

The recumbent cow around the time of calving can be affected with one of a large number of different conditions. These can be conveniently divided into four major areas:—

Recumbency after Parturition
1. Metabolic disorders
2. Toxaemia
3. Injury during parturition
4. Injury following recumbency

Despite careful assessment and clinical examination a positive diagnosis cannot be made in many of these cows. Such animals are thus often described as "downer cows". Looking at the literature the downer cow has variable definitions. From a clinical standpoint it can be described as:

The Downer Cow
Related to calving period
Animal down more than 24 hours
Animal had two calcium injections
No obvious reason for being down

Two injections of calcium are used as a method of suggesting without biochemical assessment that the cow is not affected with hypocalcaemia. Most cases are in heavy milking cows and they occur following milk fever, commonly the first two or three days post-calving. The signs are usually a bright, alert animal with a slightly reduced appetite, but she drinks normally. Rectal temperature and respiratory rate are normal but the pulse rate may be raised up to 80 to 100 per minute. Urination and defaecation are normal but often there is proteinuria, due to muscle breakdown. Biochemistry normally shows raised plasma CPK and SGOT enzyme levels.

Prognosis in such cases can be determined by (a) the average statistics, (b) any signs which are present, (c) the continual reassessment of the animal (d) changes in biochemical enzyme levels and (e) the attitude of the stockman. However in no case can any prediction be considered totally reliable.

(a) *Statistics* On average about half all downer cow cases rise within 4 days of becoming recumbent. The prognosis is poor for those down over 7 days, although individual animals may be recumbent 2 or 3 weeks and occasionally months before successfully returning to their feet.

(b) *Signs* Although most animals show roughly the signs discribed above, some will exhibit variations in stance *(Table 1)* or attitude *(Table 2).*

(c) All cases of downer cow should be re-assessed frequently. The interval between visits obviously depends on economics but, in the early stages, it is best done daily followed, after the first three to four days, by examinations every two or three days. It is essential that a full clinical examination is performed at each visit and that any changes,

Table 1 Stance changes in recumbent cows

Stance	*Possible causes*	*Prognosis*
1. "Creeper" or "crawler". Frequent attempts to rise, lifting hind quarters a few inches off ground	Hypophosphataemia	good
2. "Frog legged cow". Hind limbs flexed partially and displaced posteriorally	Hypophosphatarmia Hypocalcaemia Obturator paralysis Tibial nerve damage Adductor muscle damage	mainly good
3. Hind legs completely and rigidly extended posteriorally so they reach the front legs' elbows, Place legs in normal position often return to stance	Often upper leg problems e.g. hip dislocation, hip joint trauma, muscular degeneration, sciatic nerve damage	usually poor
4. Rest on one side. If move on other side they return to original position	May be damage to upper side but if due to muscle flaccidity then upper side is normal.	variable
5. Legs position extended behind animal	Pubis damage, nerve damage	usually poor

Table 2

Attitude changes in recumbent cow

Attitude	*Possible causes*	*Prognosis*
1. Lateral recumbency, prop up to previous position. Food and water intake minimal	chronic metabolic problems brain damage	usually poor
2. Hyperaesthesia with or without lateral recumbency and possibly tetany	Mainly brain damage but can be hypomagnesaemia or hypocalcaemia	poor good
3. Non alert	Brain damage	poor

however small, are noted. Such alterations will usually indicate whether the animal is improving or becoming worse. Many animals on biochemical testing are found to suffer from metabolic disorders when no signs are apparently clinical. The conditions found include hypocalcaemia, hypomagnesaemia, hypophosphataemia, hypokalaemia, and ketosis often in various combinations. Such cases can only be detected by effective blood plasma or sera testing. However, some animals appear to remain absolutely similar at each visit and have no metabolic problems. In such cases biochemical tests may be of use.

(d) It cannot be overstressed that biochemistry serum enzyme levels and their interpretation should only be done in those animals where clinical examination fails to indicate the progress of the cow. Thus it should be performed in those cattle which appear exactly the same at each visit. The following interpretation will not work in every animal but in many cases it will give an indication of the likely outcome. It is based on the following serum plasma enzyme levels rising.

Biochemistry

High CPK muscle damage early rise short half life
High SGOT (AST) muscle/organ damage slower rise longer half life
High UREA poor perfusion impaired kidney function protein/muscle breakdown

The test and interpretation are based on assessing changes within the biochemical enzyme status of the cow at each visit. The interval between tests should be greater than 24 hours and the first sample should not be taken until the animal has been down longer than a day.

Procedure	Sample taken	Test	Interpretation	
			rising	same or falling
First assessment	visit one*) visit two)	CPK	slaughter	keep
Second assessment	visit two) visit three)	SGOT (AST)	slaughter	keep
Third assessment	visit three) visit four)	UREA	slaughter	keep

* Visit made at least 24 hours apart

Sample 1 taken at first visit after animal a downer cow i.e. down longer than 24 hours.

The above interpretation has been used on about twenty ewes and twelve cattle seen at the Royal Veterinary College. However under such circumstances testing and assessment is perhaps easier than in the field. In consequence with the assistance of a practitioner, samples were taken from some downer cows seen by him. In each case samples were dependent on when he visited the animal, breakages in post etc, thus the examples do not completely follow the procedure laid out above. However they were taken under the strictures of the practice situation. The results were as follows:

Cow No. 1

	CPK	SGOT (AST)	UREA	
Down 25/2/82	iu/litre	iu/litre	mmol/litre	
27/2/82	1200	131	4.5	
1/3/82	700	354	4.0	
		Got up 3/3/82		(see Figure 1)

Cow 10

	CPK	SGOT (AST)	UREA	
Down 8th April	iu/litre	iu/litre	mmol/litre	
13/4/82	1650	235	7.5	
16/4/82	350	209	4.0	
19/4/82	660	220	7.5	
		Slaughtered 27/4/82		(see Figure 2)

Cow 68

	CPK	SGOT (AST)	UREA	
Down 3rd April	iu/litre	iu/litre	mmol/litre	
5/4/82	5000	685	7.1	
6/4/82	1940	347	5.3	
13/4/82	1610	153	5.3	
		Got up 20/4/82		(see Figure 3)

Figure 1. Serum levels of CPK, SGOT (AST) and Urea in cow 1 which got up
Note D = down U = up

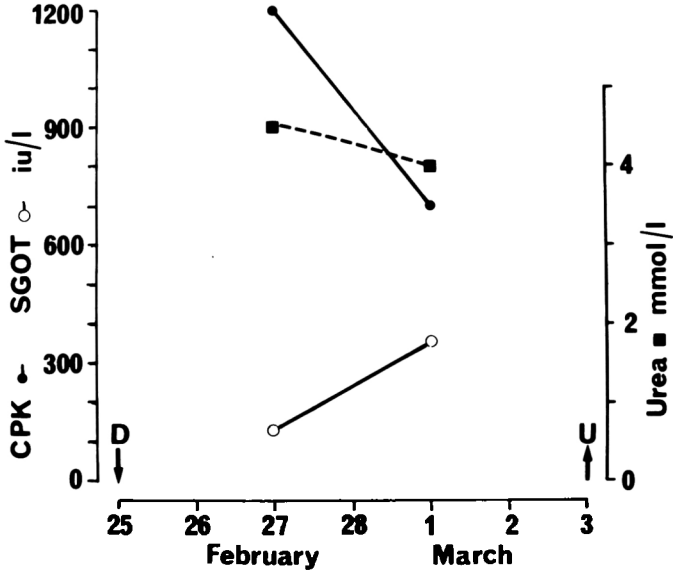


Figure 2. Serum levels of CPK, SGOT (AST) and Urea in cow 10 which was subsequently slaughterer
Note D = down S = slaughtered

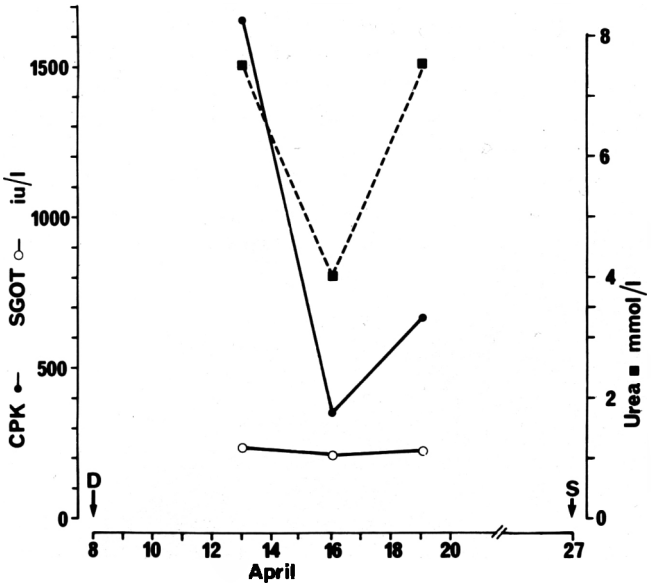
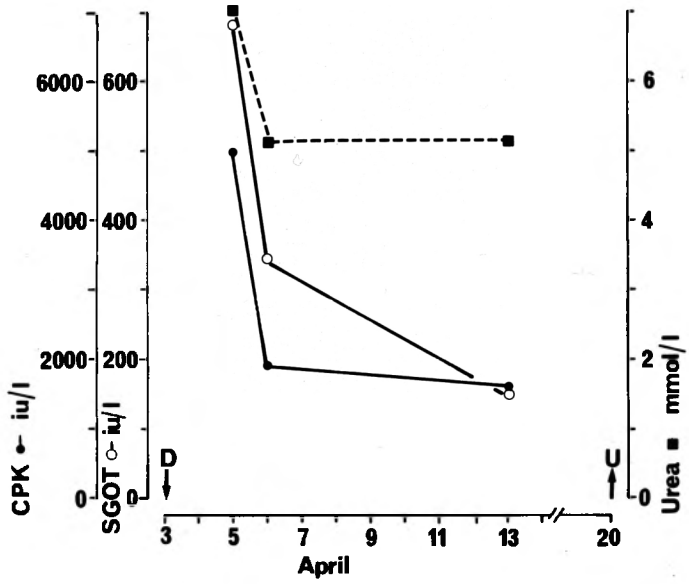
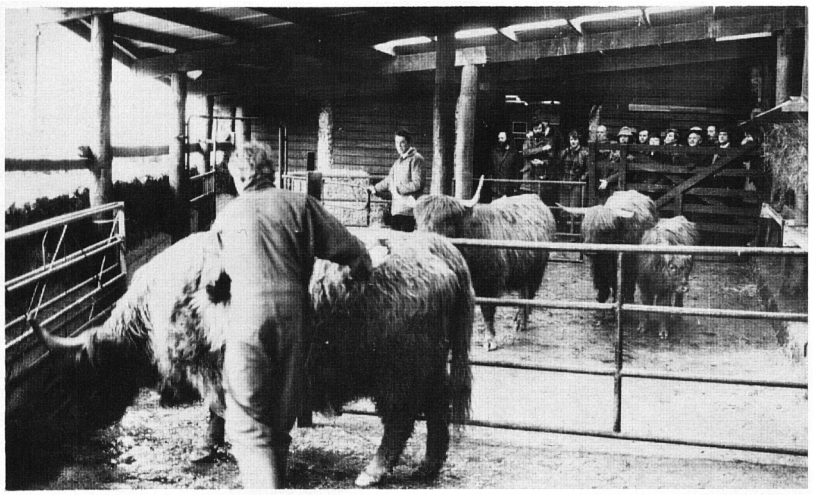


Figure 3. Serum levels of CPK, SGOT (AST) and Urea in cow 68 which got up after a protracted recumbency
Note D = down U = up



(e) Finally however good the veterinary surgeon's own powers of detection and treatment, if an animal is down any length of time, then adequate nursing is essential. If the stockman is not willing to undertake this then the chances of success are minimal and it is probably best to slaughter the animal. Prognosis is thus nearly as much dependent on the stockman as the cow.

The good stockman will do his best to assess the animal's progress for himself. Ideally the animal will be kept outside preferably in a small paddock without a slope, ditch or stream and close to the buildings. She can be hauled there on a gate or palette or with a cattle net on a fore end loader. If indoors she should be bedded on deep manure or straw so that if she tries to rise the ground will provide purchase. The animal should be fed and watered as least twice daily. She should be milked twice a day and turned from side to side an odd number of times so that she is not on the same side each evening thereby, hopefully, reducing the chance of hypostatic congestion and consequential pneumonia. The problem for any stockman is to ensure he provides adequate attention to the downer cow without neglecting his obligations to the rest of the herd. In some cases these responsibilities are irreconsilable, and in such circumstances the veterinary surgeon has an even more onnerous task in ensuring his therapy, advice and prognostic actions are as accurate and helpful as possible.



Members of the BCVA looking at Highland Cattle at a farm of rare breeds in Devon *(see p. 122)*

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