‘Cauda Equina Syndrome’ – A Clinical Dilemma

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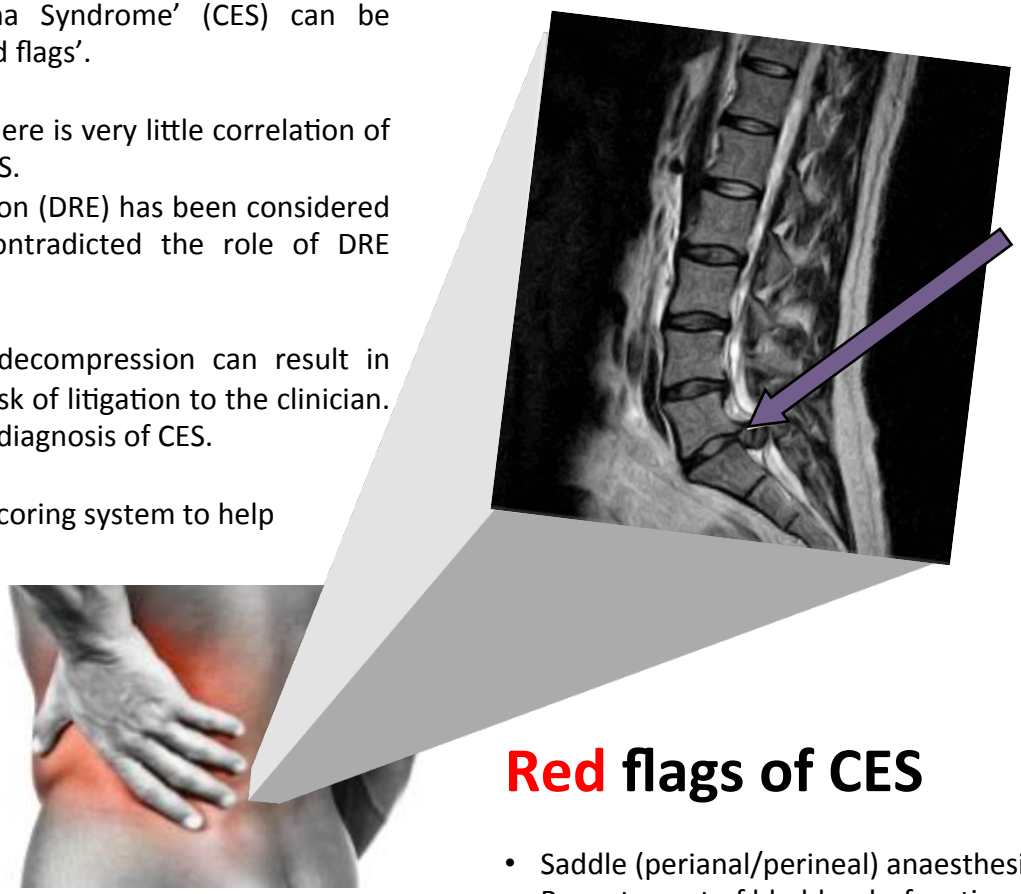
Introduction to the Problem

Clinical diagnosis of ‘Cauda Equina Syndrome’ (CES) can be challenging and relies on cardinal ‘red flags’.

Fairbank *et al.* study revealed that there is very little correlation of symptoms and signs in diagnosing CES.
Traditionally Digital Rectal Examination (DRE) has been considered crucial but recent studies have contradicted the role of DRE (Calthorpe *et al.*).

A delay in prompt diagnosis and decompression can result in worse outcomes and increases the risk of litigation to the clinician. MRI is the current Gold Standard for diagnosis of CES.

There is a need for a discriminatory scoring system to help aid clinicians in diagnosing CES.



Red flags of CES

- Saddle (perianal/perineal) anaesthesia or paraesthesiae.
- Recent onset of bladder dysfunction.
- Recent onset of faecal incontinence.
- Severe or progressive neurological deficit in the lower extremities.

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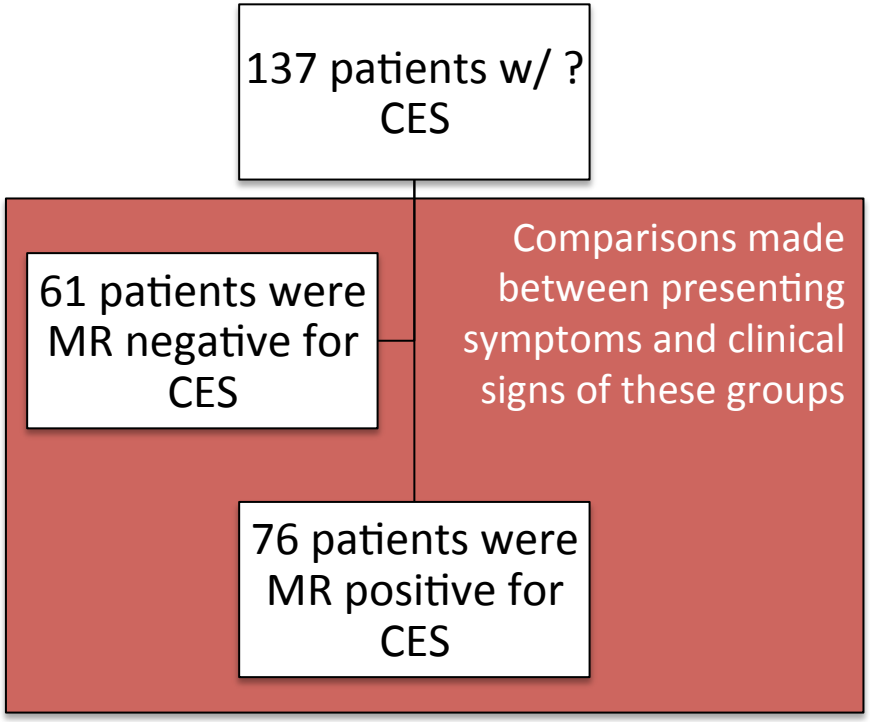
Patients and Methods

- 137 patients (60 males/77 female, mean age 42.3 years)
- Prospectively followed from Primary Care/Emergency Department referral to our Tertiary Spinal Centre.
- Referrals based upon clinical suspicion and red flag symptoms and examination findings.
- 76 patients had proven CES by MRI *vs* 61 who had clinical suspicion of CES but were MRI negative.

Comparisons were made between the patients proven to have CES by MRI and the MRI negative group to establish the positive predictive value of red flag symptoms.



NB. Statistical analysis was undertaken using IBM SPSS 20.0. Logistic regression analyses were conducted on the data, using presence of CES leading to surgery (or otherwise) as the outcome measure, and a selection of demographic variables, presenting symptoms and examination findings as predictor variables; including: age; gender; presence/absence of unilateral/bilateral sciatica, perianal paresthesiae, sphincter dysfunction, foot drop weakness and motor weakness; intact or altered perianal and dermatomal sensation; intact or absent/reduced reflexes and digital rectal examination (DRE). No distinction was made between left and right unilateral sciatica; between different categories of sphincter dysfunction; between different left and right foot drop; and between different categories of DRE: in all cases patients were coded as having the relevant condition present or absent.

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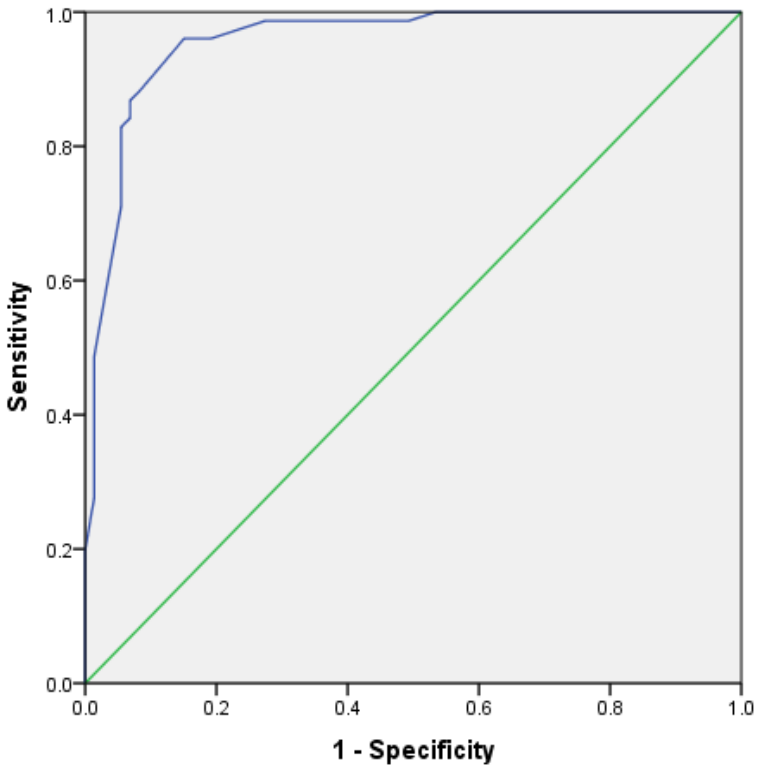
Results

Uncontrolled analyses found all predictors except age and Digital Rectal Examination findings to exhibit substantive importance. Bilateral sciatica, perianal paraesthesia and absence of motor weakness showed the strongest associations with the outcome.

Statistical significance (p-values), odds ratios (OR) and associated 95% confidence intervals (CI) of symptoms are described in Table 1 (below).

Variable	p-value	OR	95% CI
Sciatica status			
No sciatica[1]	-	-	-
Unilateral sciatica	0.009	8.54	(1.72, 42.5)
Bilateral sciatica	0.001	64.0	(6.06, 676)
Perianal paraesthesia status			
No perianal paraesthesia[1]	-	-	-
Perianal paraesthesia	0.007	26.4	(2.43, 287)
Perianal sensation status			
Sensation intact[1]	-	-	-
Sensation altered	0.055	0.31	(0.092, 1.02)
Motor weakness status			
No weakness[1]	-	-	-
Weakness	<0.001	0.031	(0.006, 0.17)
Dermatomal sensation			
Intact[1]	-	-	-
Altered	<0.001	0.107	(0.034, 0.34)



Receiver Operating Characteristic analysis (above) indicated that the model has good predictive capability, with higher probabilities of CES assigned to cases than controls in 96% of patients. 88.9% of patients were correctly classified.

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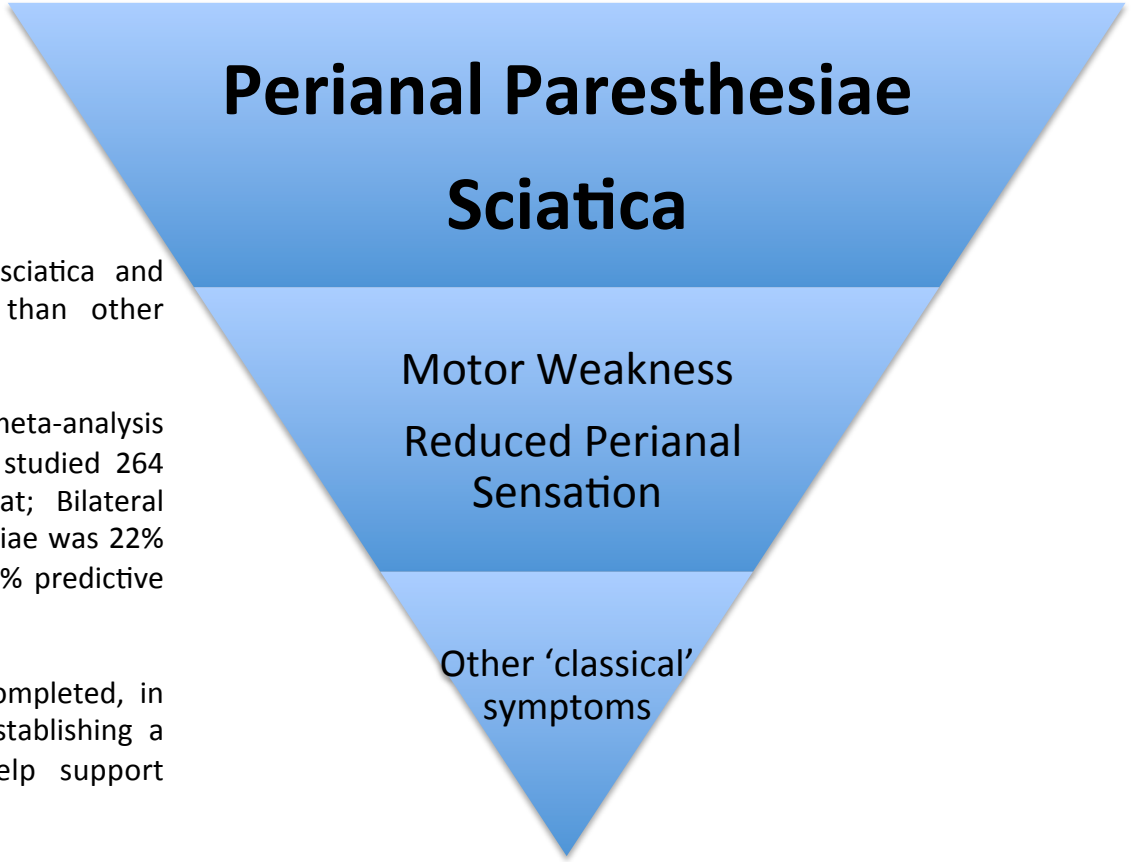
Take Home Message

The positive constellation of symptoms of sciatica and paraesthesia are more predictive of CES than other symptoms.

These findings are in-keeping with the recent meta-analysis by Jing-Chuan Sun *et al.* (Spine 2014) which studied 264 cases from 198 publications and found that; Bilateral Sciatica was 31% predictive, Perianal Paresthesiae was 22% predictive and Sphincter Dysfunction was 12.6% predictive of CES.

This study, the largest single centre study completed, in addition to previous research can prelude establishing a predictive scoring system for CES and help support clinicians’ index of suspicion in the future.



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Disclosure Declaration

None of the authors report any conflict of interest.