

Supplementary Online Content

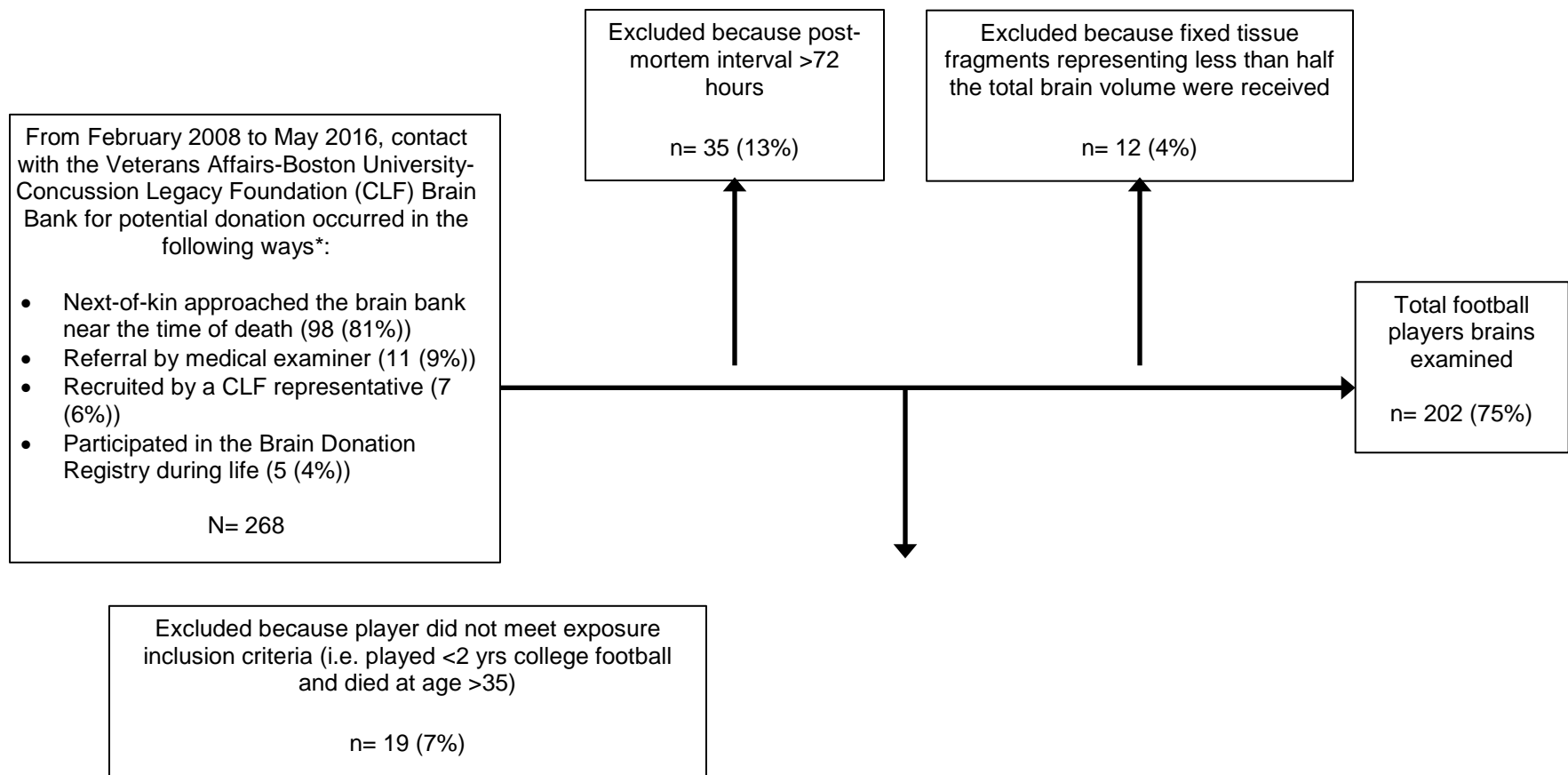
Mez J, Daneshvar DH, Kiernan PT, et al. Clinicopathological evaluation of chronic traumatic encephalopathy in players of American football. *JAMA*. doi:10.1001/jama.2017.8334

eFigure. Enrollment Flow Chart

eTable. Clinical Features Stratified by CTE Severity Among Players With Pure CTE

This supplementary material has been provided by the authors to give readers additional information about their work.

eFigure 1. Enrollment Flow Chart



*Percentages calculated based on tracking beginning in 2014 (n= 121)

eTable 1. Clinical Features Stratified by CTE Severity Among Players With Pure CTE*#

Clinical features	Mild No. (%)	Severe No. (%)	Total No. (%)
Cognitive symptoms	17 (85)	36 (90)	53 (88)
Memory	14 (70)	33 (85)	47 (80)
Executive function	13 (68)	28 (72)	41 (71)
Attention	13 (68)	28 (72)	41 (71)
Language	6 (32)	21 (54)	27 (47)
Visuospatial	4 (21)	16 (41)	20 (35)
Fluctuating cognition	0	7 (18)	7 (12)
Dementia	3 (15)	28 (70)	31 (52)
Behavioral or mood symptoms	20 (100)	37 (93)	57 (95)
Impulsivity	18 (95)	31 (80)	49 (85)
Depressive symptoms	16 (80)	23 (59)	39 (66)
Explosivity	16 (80)	18 (45)	34 (57)
Apathy	11 (58)	25 (64)	36 (62)
Anxiety	13 (65)	22 (56)	35 (59)
Hopelessness	14 (74)	16 (44)	30 (55)
Verbally violent	14 (70)	15 (40)	29 (50)
Socially inappropriate	10 (50)	13 (34)	23 (39)
Physically violent	13 (65)	13 (33)	26 (44)
Paranoia	10 (50)	12 (31)	22 (37)
Suicidality (including ideation, attempts or suicide)	14 (70)	12 (31)	26 (44)
Visual hallucinations	2 (11)	8 (21)	10 (18)
Mania	5 (25)	2 (5)	7 (12)
PTSD (exposure and symptoms consistent with)	3 (15)	6 (15)	9 (15)
Substance use disorder	15 (75)	25 (63)	40 (66)
Alcohol	11 (58)	21 (54)	32 (55)
Anabolic steroid	0	3 (7)	3 (5)
Other	13 (68)	14 (36)	27 (47)
Motor symptoms	9 (45)	24 (60)	33 (54)
Gait instability	4 (20)	20 (50)	24 (40)
Slowness	2 (10)	16 (40)	18 (30)
Coordination difficulties	3 (15)	12 (30)	15 (25)
Falls	2 (10)	14 (35)	16 (27)
Tremor	3 (15)	15 (38)	18 (30)
Dysphagia	0	4 (11)	4 (7)
Dysarthria	2 (10)	3 (8)	5 (9)
Headache	7 (35)	8 (21)	15 (25)
Diagnoses in life			
MND	0	0	0
PD	0	0	0

AD	0	6 (15)	6 (10)
OSA diagnosis or symptoms	4 (21)	19 (53)	23 (42)
RBD diagnosis or symptoms	4 (21)	12 (32)	16 (29)

*Pure CTE refers to the absence of concomitant neuropathological diagnoses

#Mild CTE (CTE pathological stages I and II) is characterized by sparse- frequent perivascular CTE lesions at the sulcal depths of the cerebral cortex. Severe CTE (CTE pathological stages III and IV) consists of multiple CTE lesions in the cerebral cortex and moderate- severe neurofibrillary degeneration of medial temporal lobe, diencephalon and brainstem.

Abbreviations: AD: Alzheimer’s disease; MND: motor neuron disease; OSA: obstructive sleep apnea; PD: Parkinson’s disease; PTSD: post-traumatic stress disorder; RBD: rapid eye movement sleep behavior disorder; SD: standard deviation

There were 60 participants with identical clinical evaluations. This included 20 participants with mild CTE and 40 participants with severe CTE. Sample sizes differed across clinical features because features marked as “unknown” by the clinician were excluded. For participants with mild CTE, sample sizes ranged from 18 to 20 and for participants with severe CTE, sample sizes ranged from 36 to 40.