



1
00:00:05,570 --> 00:00:03,400
keep your socks on you'll be all right

2
00:00:07,519 --> 00:00:05,580
there over the last couple years has

3
00:00:09,980 --> 00:00:07,529
been quite little information in the

4
00:00:12,799 --> 00:00:09,990
press about traumatic brain injury most

5
00:00:16,400 --> 00:00:12,809
of it related to reports on X football

6
00:00:18,519 --> 00:00:16,410
players who is a consequence of repeated

7
00:00:20,779 --> 00:00:18,529
hits to the head have become depressed

8
00:00:23,779 --> 00:00:20,789
often times homeless and then commit

9
00:00:25,189 --> 00:00:23,789
suicide and it's probably good that

10
00:00:26,870 --> 00:00:25,199
there's some attention being brought to

11
00:00:29,919 --> 00:00:26,880
this problem although it should be

12
00:00:33,260 --> 00:00:29,929
pointed out right off the bat that the

13
00:00:38,330 --> 00:00:33,270

football players or the athletes are not

14

00:00:39,740 --> 00:00:38,340

the major targets for this disease there

15

00:00:41,630 --> 00:00:39,750

are about a one and a half to two

16

00:00:43,520 --> 00:00:41,640

million cases a year in this country of

17

00:00:46,790 --> 00:00:43,530

traumatic brain injury 50,000 deaths

18

00:00:49,190 --> 00:00:46,800

80,000 disabled in the military there

19

00:00:51,889 --> 00:00:49,200

another 300,000 that doesn't include

20

00:00:54,950 --> 00:00:51,899

people in the VA but the leading causes

21

00:00:56,920 --> 00:00:54,960

are not athletic injuries by far and

22

00:00:59,299 --> 00:00:56,930

away at the leading causes are accidents

23

00:01:00,709 --> 00:00:59,309

falling off your bicycle or falling off

24

00:01:03,290 --> 00:01:00,719

the roof or whatever it might be

25

00:01:05,780 --> 00:01:03,300

interestingly enough assaults come in

26

00:01:11,270 --> 00:01:05,790

second domestic assaults and then

27

00:01:13,340 --> 00:01:11,280

athletics there are two types of

28

00:01:16,130 --> 00:01:13,350

traumatic brain injury the experts say

29

00:01:19,490 --> 00:01:16,140

that these are separate diseases I'm not

30

00:01:21,350 --> 00:01:19,500

convinced of it but there are acute

31

00:01:24,410 --> 00:01:21,360

and chronic forms of traumatic brain

32

00:01:27,620 --> 00:01:24,420

injury and as indicated in the slide the

33

00:01:29,810 --> 00:01:27,630

acute are injuries such as concussions

34

00:01:32,359 --> 00:01:29,820

head bumps they don't have to be

35

00:01:35,420 --> 00:01:32,369

associated with any period of

36

00:01:38,600 --> 00:01:35,430

unconsciousness they heal rapidly and

37

00:01:40,580 --> 00:01:38,610

spontaneously but multiple injuries of

38

00:01:46,160 --> 00:01:40,590

this sort can lead to problems later on

39

00:01:48,200 --> 00:01:46,170

and it or it or it is these acute form

40

00:01:50,120 --> 00:01:48,210

these cute injuries that are as a focus

41

00:01:53,300 --> 00:01:50,130

of most of the research being done now

42

00:01:56,080 --> 00:01:53,310

both in this country and otherwise and

43

00:01:59,149 --> 00:01:56,090

we'll see in a minute why that is

44

00:02:01,880 --> 00:01:59,159

in contrast the chronic form of

45

00:02:04,490 --> 00:02:01,890

traumatic brain injury is a result of

46

00:02:07,219 --> 00:02:04,500

multiple insults or sometimes just one

47

00:02:09,559 --> 00:02:07,229

really serious one and I have these

48

00:02:11,900 --> 00:02:09,569

first couple or three dot points just as

49

00:02:13,910 --> 00:02:11,910

an example of different forms of

50

00:02:16,040 --> 00:02:13,920

injuries resulting in chronic

51
00:02:18,070 --> 00:02:16,050
traumatic brain injury the first is one

52
00:02:23,690 --> 00:02:18,080
of the patients in our group who is a

53
00:02:25,760 --> 00:02:23,700
Hall of Fame lineman in the FN NFL he's

54
00:02:27,949 --> 00:02:25,770
up there because he's all being also

55
00:02:30,559 --> 00:02:27,959
being studied by a team from UCLA and

56
00:02:32,720 --> 00:02:30,569
the group of UCLA is not doing anything

57
00:02:35,059 --> 00:02:32,730
therapeutically for this fella like we

58
00:02:37,490 --> 00:02:35,069
are what they're doing is following the

59
00:02:39,290 --> 00:02:37,500
morphology of his brain over time seeing

60
00:02:42,190 --> 00:02:39,300
how it changes and see if they can

61
00:02:44,690 --> 00:02:42,200
really changes into the morphology to

62
00:02:47,390 --> 00:02:44,700
function but what's interesting about

63
00:02:51,400 --> 00:02:47,400

his situation is that as a prelude to

64

00:02:53,059 --> 00:02:51,410

starting the the UCLA study the

65

00:02:55,670 --> 00:02:53,069

investigators there did some

66

00:02:59,090 --> 00:02:55,680

calculations to find out just how often

67

00:03:03,199 --> 00:02:59,100

to dis guy get hit in his career it end

68

00:03:05,740 --> 00:03:03,209

up over 250,000 times this is from

69

00:03:09,020 --> 00:03:05,750

peewee football till until his

70

00:03:12,380 --> 00:03:09,030

retirement from the NFL so that's that's

71

00:03:14,990 --> 00:03:12,390

really repeated injury the next dot

72

00:03:17,479 --> 00:03:15,000

point there is a physician who was in

73

00:03:18,860 --> 00:03:17,489

the an auto accident not able to

74

00:03:20,240 --> 00:03:18,870

practice medicine anymore as a

75

00:03:21,319 --> 00:03:20,250

consequence of the accident we're

76

00:03:23,750 --> 00:03:21,329

getting him back to where I think he'll

77

00:03:25,849 --> 00:03:23,760

be able to do that again but again one

78

00:03:27,770 --> 00:03:25,859

serious accident he's in trouble and

79

00:03:29,810 --> 00:03:27,780

we'll come back to these these guys in

80

00:03:32,449 --> 00:03:29,820

in a few minutes the third one is

81

00:03:35,270 --> 00:03:32,459

another physician who was riding her

82

00:03:37,849 --> 00:03:35,280

horse one day the horse reared up threw

83

00:03:41,900 --> 00:03:37,859

her off she landed on her head and that

84

00:03:43,630 --> 00:03:41,910

was it for her now the problem and one

85

00:03:46,099 --> 00:03:43,640

of the real couple of the reasons why

86

00:03:48,319 --> 00:03:46,109

there is less work being done with the

87

00:03:52,340 --> 00:03:48,329

chronic form of disease and the acute is

88

00:03:53,720 --> 00:03:52,350

that there are no biomarkers for the

89

00:03:56,300 --> 00:03:53,730

chronic form there's nothing you can

90

00:03:58,069 --> 00:03:56,310

look at in the serum the blood urine or

91

00:04:00,640 --> 00:03:58,079

anything of that sort to get an idea of

92

00:04:03,080 --> 00:04:00,650

disease progression or stability or

93

00:04:05,150 --> 00:04:03,090

alterations as a consequence of therapy

94

00:04:08,210 --> 00:04:05,160

and likewise there are no standard

95

00:04:10,610 --> 00:04:08,220

standardized animal models which again

96

00:04:14,449 --> 00:04:10,620

for the investigators make things makes

97

00:04:16,190 --> 00:04:14,459

things a little bit tougher so just a

98

00:04:18,199 --> 00:04:16,200

nutshell summary of what we're doing for

99

00:04:22,700 --> 00:04:18,209

these patients is we're using an

100

00:04:26,930 --> 00:04:22,710

oxidized form of streptomycin oh and

101
00:04:27,800 --> 00:04:26,940
streptomycin Oh is a toxin that's

102
00:04:29,780 --> 00:04:27,810
produced by

103
00:04:31,850 --> 00:04:29,790
group a beta hemolytic streptococcal

104
00:04:33,950 --> 00:04:31,860
that's a mouthful but that's the strep

105
00:04:36,170 --> 00:04:33,960
to cause a strep throat and it's this

106
00:04:38,420 --> 00:04:36,180
exotoxin the causes as a pain of strep

107
00:04:42,190 --> 00:04:38,430
throat we oxidize it so it's no longer

108
00:04:44,300 --> 00:04:42,200
toxic and it has some absolutely unique

109
00:04:46,510 --> 00:04:44,310
biological activities as a consequence

110
00:04:48,440 --> 00:04:46,520
of the oxidation we've used it

111
00:04:51,020 --> 00:04:48,450
anecdotally and in a couple controlled

112
00:04:52,400 --> 00:04:51,030
studies clinically to treat a wide

113
00:04:55,879 --> 00:04:52,410

variety of scars

114

00:04:59,120 --> 00:04:55,889

everything from idiopathic pulmonary

115

00:05:03,050 --> 00:04:59,130

fibrosis to cardiomyopathy polycystic

116

00:05:05,270 --> 00:05:03,060

kidney acne scars adhesions trauma

117

00:05:08,270 --> 00:05:05,280

induced scars and so forth and these are

118

00:05:11,480 --> 00:05:08,280

all collagen related problems and we

119

00:05:14,300 --> 00:05:11,490

know that the SLO our product is a

120

00:05:16,370 --> 00:05:14,310

potent product for regulating collagen

121

00:05:18,350 --> 00:05:16,380

deposition it's also a potent

122

00:05:21,080 --> 00:05:18,360

anti-inflammatory agent we'll see why

123

00:05:23,690 --> 00:05:21,090

that's important it also down regulates

124

00:05:26,540 --> 00:05:23,700

mmp9 which doesn't mean a whole lot to

125

00:05:29,090 --> 00:05:26,550

most people I suspect but that is a gene

126

00:05:31,100 --> 00:05:29,100

that produces a protein that is

127

00:05:33,260 --> 00:05:31,110

associated with a wide variety of

128

00:05:34,850 --> 00:05:33,270

chronic disorders and over the last

129

00:05:36,650 --> 00:05:34,860

eight or nine years over seven billion

130

00:05:39,230 --> 00:05:36,660

dollars has been spent by the

131

00:05:41,779 --> 00:05:39,240

pharmaceutical industry to find products

132

00:05:43,250 --> 00:05:41,789

that down regulate that gene there are

133

00:05:45,380 --> 00:05:43,260

several of those products have come to

134

00:05:51,020 --> 00:05:45,390

Phase three trials they're all toxic

135

00:05:54,170 --> 00:05:51,030

this one is not we know that slo acts as

136

00:05:56,480 --> 00:05:54,180

a very potent signal to inhibit scar

137

00:05:59,510 --> 00:05:56,490

formation in an acute scar in an acute

138

00:06:02,150 --> 00:05:59,520

situation so if you get a bad cut for

139

00:06:05,090 --> 00:06:02,160

example take SLO sublingually or even

140

00:06:06,560 --> 00:06:05,100

rub it on a scar will not form instead

141

00:06:08,690 --> 00:06:06,570

there'll be a stimulation of what are

142

00:06:11,360 --> 00:06:08,700

called keratinocytes that will move into

143

00:06:13,850 --> 00:06:11,370

the wound you'll heal without a scar in

144

00:06:16,159 --> 00:06:13,860

old wounds the SLO upsets the balance

145

00:06:19,100 --> 00:06:16,169

between collagen which is the scar

146

00:06:21,020 --> 00:06:19,110

tissue and collagenase which is a an

147

00:06:24,020 --> 00:06:21,030

enzyme that breaks down collagen and

148

00:06:26,240 --> 00:06:24,030

that imbalance goes in favor of

149

00:06:28,520 --> 00:06:26,250

collagenase so it starts to break down

150

00:06:33,740 --> 00:06:28,530

old scars and that old scar is replaced

151
00:06:36,190 --> 00:06:33,750
by more vital tissue so we know the SLO

152
00:06:38,690 --> 00:06:36,200
acts on both internal and external scars

153
00:06:40,850 --> 00:06:38,700
we didn't know if I'd work on traumatic

154
00:06:41,420 --> 00:06:40,860
brain injury because there's no collagen

155
00:06:46,640 --> 00:06:41,430
in

156
00:06:49,040 --> 00:06:46,650
different system we did this little

157
00:06:50,690 --> 00:06:49,050
study with some investigators at Harvard

158
00:06:54,770 --> 00:06:50,700
Medical School in Boston Children's

159
00:06:57,710 --> 00:06:54,780
Hospital this is a bear model it's a

160
00:06:59,930 --> 00:06:57,720
it's a standardized mouse model for

161
00:07:03,100 --> 00:06:59,940
looking at acute traumatic brain injury

162
00:07:06,110 --> 00:07:03,110
and what happens here if I can find this

163
00:07:07,160 --> 00:07:06,120

woops sorry sorry sorry let's get back

164

00:07:09,770 --> 00:07:07,170

to where we belong

165

00:07:14,450 --> 00:07:09,780

and see if I can find this little dot

166

00:07:17,930 --> 00:07:14,460

there we go what we do is put the

167

00:07:20,720 --> 00:07:17,940

animals in a restrainer and hit them on

168

00:07:23,480 --> 00:07:20,730

the head with a pneumatic punch and you

169

00:07:26,740 --> 00:07:23,490

can measure the strength of the punch

170

00:07:32,690 --> 00:07:26,750

and the location wonderful technology

171

00:07:34,910 --> 00:07:32,700

the Sham animals tease Omiya the Sham

172

00:07:37,040 --> 00:07:34,920

animals I'm not going to use the pointer

173

00:07:39,920 --> 00:07:37,050

anymore the Sham animals are put into

174

00:07:42,230 --> 00:07:39,930

the restrainer but are not injured the

175

00:07:44,930 --> 00:07:42,240

next group the middle group the c-h-i is

176

00:07:47,690 --> 00:07:44,940

just in the strain of mouse those

177

00:07:49,940 --> 00:07:47,700

animals are put into the restrainer are

178

00:07:52,360 --> 00:07:49,950

bopped once in the head and then they

179

00:07:54,680 --> 00:07:52,370

are treated with the vehicle which is a

180

00:07:56,690 --> 00:07:54,690

PBS phosphate buffered saline

181

00:07:58,670 --> 00:07:56,700

the third group punched in the head in

182

00:08:00,320 --> 00:07:58,680

the restrainer and treated with SLO and

183

00:08:03,290 --> 00:08:00,330

then what we want to do is measure

184

00:08:05,420 --> 00:08:03,300

memory loss and ability to recovery

185

00:08:07,250 --> 00:08:05,430

short-term memory so what you're seeing

186

00:08:09,650 --> 00:08:07,260

here again without the pointer that a

187

00:08:12,140 --> 00:08:09,660

lot of most line as the green indicates

188

00:08:14,900 --> 00:08:12,150

are the Sham controls and you can see

189

00:08:18,640 --> 00:08:14,910

that one day after the injury it takes

190

00:08:21,950 --> 00:08:18,650

them about 27 or 28 seconds to find a

191

00:08:23,660 --> 00:08:21,960

submerged island in a little pond that

192

00:08:24,770 --> 00:08:23,670

they will swim to and stand on to get

193

00:08:27,290 --> 00:08:24,780

out of the water so they can breathe

194

00:08:29,330 --> 00:08:27,300

easily alright so that's the idea then

195

00:08:30,530 --> 00:08:29,340

every day for five days they are put

196

00:08:31,940 --> 00:08:30,540

back in the pond and what you're

197

00:08:34,130 --> 00:08:31,950

measuring is how long does it take for

198

00:08:36,050 --> 00:08:34,140

them to find the island and you can see

199

00:08:36,860 --> 00:08:36,060

that by day five they're down to five or

200

00:08:38,300 --> 00:08:36,870

six seconds

201
00:08:40,790 --> 00:08:38,310
they found the spot their short-term

202
00:08:43,460 --> 00:08:40,800
memory is is great that's the control

203
00:08:45,050 --> 00:08:43,470
that had no injury the next line is the

204
00:08:47,810 --> 00:08:45,060
black one that goes up and down those

205
00:08:50,210 --> 00:08:47,820
are the animals that are injured and

206
00:08:52,340 --> 00:08:50,220
then treated with just the vehicle you

207
00:08:55,070 --> 00:08:52,350
can see that the injury causes an

208
00:08:57,380 --> 00:08:55,080
incredible increase in length of time

209
00:09:01,460 --> 00:08:57,390
on day one to find that island they're

210
00:09:03,290 --> 00:09:01,470
up at around 47 48 seconds they do very

211
00:09:04,580 --> 00:09:03,300
nicely in day 2 they come down to about

212
00:09:05,030 --> 00:09:04,590
half the time but they don't get any

213
00:09:06,860 --> 00:09:05,040

better

214

00:09:08,690 --> 00:09:06,870

that's as that's as good as it's going

215

00:09:11,020 --> 00:09:08,700

to get and then the treated animals you

216

00:09:13,820 --> 00:09:11,030

can see the Deana was treated with SLO

217

00:09:15,320 --> 00:09:13,830

come down to by day five they're

218

00:09:19,820 --> 00:09:15,330

starting to come pretty close back to

219

00:09:22,190 --> 00:09:19,830

altogether normal if we euthanize those

220

00:09:23,780 --> 00:09:22,200

animals take their brains out well I'm

221

00:09:25,100 --> 00:09:23,790

not going to spend time on any portion

222

00:09:27,110 --> 00:09:25,110

of this slide except the bottom right

223

00:09:30,350 --> 00:09:27,120

hand corner this is extremely important

224

00:09:33,320 --> 00:09:30,360

microglia cells are cells in the brain

225

00:09:35,720 --> 00:09:33,330

that on injury start to infiltrate into

226

00:09:37,250 --> 00:09:35,730

the area of injury and I'll tell you

227

00:09:40,150 --> 00:09:37,260

what that means in a second but you can

228

00:09:43,340 --> 00:09:40,160

see well we'll try this one last time

229

00:09:45,770 --> 00:09:43,350

there we go you can see that microglia

230

00:09:48,320 --> 00:09:45,780

infiltration is a great deal greater in

231

00:09:50,600 --> 00:09:48,330

the animals that were treated with just

232

00:09:52,820 --> 00:09:50,610

the phosphate buffered saline that in

233

00:09:55,160 --> 00:09:52,830

either the sham controls or those that

234

00:09:57,110 --> 00:09:55,170

were treated with SLO the significance

235

00:09:58,730 --> 00:09:57,120

of that is the microglia are the

236

00:10:01,190 --> 00:09:58,740

predecessors to inflammation and

237

00:10:03,410 --> 00:10:01,200

inflammation is the predecessor to

238

00:10:05,120 --> 00:10:03,420

scarring scarring in the brain is going

239

00:10:08,060 --> 00:10:05,130

to be in the form of gliosis rather than

240

00:10:12,530 --> 00:10:08,070

collagen but the fundamental situation

241

00:10:13,790 --> 00:10:12,540

is the same and this you can't see quite

242

00:10:15,770 --> 00:10:13,800

as much as you might like but the ID

243

00:10:18,380 --> 00:10:15,780

here is that we're looking at a marker

244

00:10:21,140 --> 00:10:18,390

for microglia cells and there are more

245

00:10:23,360 --> 00:10:21,150

of those cells in the Sham controls more

246

00:10:25,160 --> 00:10:23,370

of these these bright points or dark

247

00:10:28,700 --> 00:10:25,170

points than there are in either the Sham

248

00:10:31,040 --> 00:10:28,710

or the SLO again confirmation that SLO

249

00:10:34,670 --> 00:10:31,050

is inhibiting microglial infiltration

250

00:10:36,350 --> 00:10:34,680

and likewise is preventing scarring in

251

00:10:39,650 --> 00:10:36,360

the brain of these mice in the acute

252

00:10:41,030 --> 00:10:39,660

type of disease now jump to the chronic

253

00:10:44,990 --> 00:10:41,040

situation we've got more of a problem

254

00:10:47,240 --> 00:10:45,000

again there's no animal model so what we

255

00:10:49,430 --> 00:10:47,250

have to do that one by the way the third

256

00:10:51,110 --> 00:10:49,440

point there are no biomarkers at all so

257

00:10:55,670 --> 00:10:51,120

we have to focus on performance outcome

258

00:10:58,130 --> 00:10:55,680

and we have done work with humans that

259

00:11:01,280 --> 00:10:58,140

have been damaged for anywhere from a

260

00:11:03,530 --> 00:11:01,290

few months to a few decades here's the

261

00:11:07,070 --> 00:11:03,540

sort of thing we see first just looking

262

00:11:08,829 --> 00:11:07,080

at kind of an overview of athletes from

263

00:11:15,199 --> 00:11:08,839

different

264

00:11:18,530 --> 00:11:15,209

treated and this is what we see usually

265

00:11:20,060 --> 00:11:18,540

within the first couple weeks we start

266

00:11:21,220 --> 00:11:20,070

to see improvement in terms of the

267

00:11:23,600 --> 00:11:21,230

headache dizziness and lightheadedness

268

00:11:25,430 --> 00:11:23,610

you'll remember a few slides back there

269

00:11:27,560 --> 00:11:25,440

was the one physician that got knocked

270

00:11:32,840 --> 00:11:27,570

off her horse and and landed on her head

271

00:11:35,269 --> 00:11:32,850

that gal had headaches 24/7 starting

272

00:11:37,040 --> 00:11:35,279

immediately after the fall lasting four

273

00:11:39,920 --> 00:11:37,050

five or six months before she started

274

00:11:42,019 --> 00:11:39,930

SLO therapy and after the second day she

275

00:11:42,769 --> 00:11:42,029

had no more headaches she hasn't had any

276

00:11:45,920 --> 00:11:42,779

sense

277

00:11:48,199 --> 00:11:45,930

so some signs and symptoms respond very

278

00:11:50,930 --> 00:11:48,209

quickly others not so not so fast

279

00:11:52,940 --> 00:11:50,940

short-term memory improves better the

280

00:11:54,769 --> 00:11:52,950

other physician that was mentioned in

281

00:11:56,389 --> 00:11:54,779

the previous slide the one who was in

282

00:11:59,090 --> 00:11:56,399

the car accident is no longer able to

283

00:12:01,610 --> 00:11:59,100

practice medicine had really significant

284

00:12:04,490 --> 00:12:01,620

damage to short-term memory and into

285

00:12:09,199 --> 00:12:04,500

cognition and focus that is all coming

286

00:12:13,100 --> 00:12:09,209

back now this that point way down here

287

00:12:14,960 --> 00:12:13,110

is perhaps the most important all of the

288

00:12:17,329 --> 00:12:14,970

patients that have been treated with SLO

289

00:12:22,430 --> 00:12:17,339

all of the chronically injured patients

290

00:12:25,639 --> 00:12:22,440

show decreased emotional volatility this

291

00:12:28,220 --> 00:12:25,649

is huge they are able to control their

292

00:12:30,920 --> 00:12:28,230

emotions better they are not lashing out

293

00:12:33,170 --> 00:12:30,930

they don't get frustrated they sleep

294

00:12:34,550 --> 00:12:33,180

better the consequences of those sorts

295

00:12:35,840 --> 00:12:34,560

of things are that they now can hold

296

00:12:37,730 --> 00:12:35,850

jobs they're going to get fired

297

00:12:39,680 --> 00:12:37,740

otherwise their interpersonal

298

00:12:42,319 --> 00:12:39,690

relationships are much better they're

299

00:12:44,930 --> 00:12:42,329

not getting divorced they can carry out

300

00:12:47,000 --> 00:12:44,940

normal activities of daily life without

301
00:12:49,220 --> 00:12:47,010
breaking windows or lashing out at their

302
00:12:52,730 --> 00:12:49,230
children or whatever might occur of that

303
00:12:54,980 --> 00:12:52,740
sort now I would like to have the

304
00:12:56,710 --> 00:12:54,990
liberty of looking at what happens we're

305
00:12:59,030 --> 00:12:56,720
just going to look at one patient

306
00:13:01,400 --> 00:12:59,040
follow-through with this one this is a

307
00:13:04,790 --> 00:13:01,410
lady that was in a serious car accident

308
00:13:07,670 --> 00:13:04,800
30 years before the start of SLO therapy

309
00:13:10,880 --> 00:13:07,680
okay serious accident to the extent that

310
00:13:11,300 --> 00:13:10,890
she needs 24/7 care from her family

311
00:13:14,600 --> 00:13:11,310
members

312
00:13:16,670 --> 00:13:14,610
I picked this patient not because she's

313
00:13:19,160 --> 00:13:16,680

better or worse responder to two-hour

314

00:13:22,290 --> 00:13:19,170

therapy but because her father is a nice

315

00:13:24,180 --> 00:13:22,300

enough guy to send reports in about her

316

00:13:27,750 --> 00:13:24,190

every once in a while so we can follow

317

00:13:30,150 --> 00:13:27,760

what's going on she was by the way 18 or

318

00:13:33,180 --> 00:13:30,160

19 years old at the time of injury so

319

00:13:34,830 --> 00:13:33,190

she's pushing 50 years old now here's

320

00:13:37,680 --> 00:13:34,840

what we're going to see first report

321

00:13:39,390 --> 00:13:37,690

comes in 40 days after the start of SLO

322

00:13:42,000 --> 00:13:39,400

therapy and look at the first thing the

323

00:13:43,680 --> 00:13:42,010

father said she's calmer that's just

324

00:13:46,080 --> 00:13:43,690

like the football players the boxers and

325

00:13:48,570 --> 00:13:46,090

all those there's a decrease volatility

326

00:13:51,570 --> 00:13:48,580

of her emotions that is very very big

327

00:13:53,700 --> 00:13:51,580

deal now she can follow the stock

328

00:13:54,810 --> 00:13:53,710

reports on the TV shark tank which I'm

329

00:13:57,090 --> 00:13:54,820

not sure what that is but I think it's a

330

00:13:58,170 --> 00:13:57,100

TV show isn't it whatever it is she can

331

00:14:01,110 --> 00:13:58,180

do it now and she couldn't do it before

332

00:14:03,000 --> 00:14:01,120

and she's reading more because of

333

00:14:05,010 --> 00:14:03,010

improved short-term memory just in 40

334

00:14:07,110 --> 00:14:05,020

days and understand she went about 30

335

00:14:09,180 --> 00:14:07,120

years without reading and the reason for

336

00:14:10,530 --> 00:14:09,190

that is at the bottom of the page she

337

00:14:12,780 --> 00:14:10,540

couldn't remember what was at the top of

338

00:14:16,740 --> 00:14:12,790

the page so just out of frustration she

339

00:14:18,570 --> 00:14:16,750

quit reading 70 days first thing the

340

00:14:20,340 --> 00:14:18,580

father says again she's calmer

341

00:14:25,020 --> 00:14:20,350

she's now for the first time enjoying

342

00:14:26,610 --> 00:14:25,030

physical therapy 106 days looked down

343

00:14:29,130 --> 00:14:26,620

there it says calm her again more

344

00:14:31,650 --> 00:14:29,140

positive attitude reading more for the

345

00:14:33,990 --> 00:14:31,660

first time she's taking care of herself

346

00:14:37,350 --> 00:14:34,000

first time in 30 years that she's

347

00:14:39,840 --> 00:14:37,360

worried about her appearance 141 days

348

00:14:41,700 --> 00:14:39,850

look at that this is really kind of fun

349

00:14:44,400 --> 00:14:41,710

of course she's calmer again we were not

350

00:14:47,580 --> 00:14:44,410

aware that she had had damage to her

351
00:14:49,500 --> 00:14:47,590
soft palate in this accident and the

352
00:14:51,150 --> 00:14:49,510
consequence of that was that she had

353
00:14:53,190 --> 00:14:51,160
difficulty speaking and was a great

354
00:14:55,110 --> 00:14:53,200
difficulty interpreting what she was

355
00:14:58,320 --> 00:14:55,120
saying so it was hard for her to talk

356
00:15:00,930 --> 00:14:58,330
and hard to understand what she was

357
00:15:03,330 --> 00:15:00,940
saying we got this report about clearer

358
00:15:05,340 --> 00:15:03,340
speech from her brother who hadn't seen

359
00:15:09,120 --> 00:15:05,350
her for about two-and-a-half months and

360
00:15:10,710 --> 00:15:09,130
the first thing he reported when the the

361
00:15:13,350 --> 00:15:10,720
patient and her father arrived at the

362
00:15:15,510 --> 00:15:13,360
brothers house was geez what happened to

363
00:15:19,470 --> 00:15:15,520

your speech and this is in a positive

364

00:15:21,270 --> 00:15:19,480

sort of way 173 days she can remember

365

00:15:23,100 --> 00:15:21,280

things I remember she had a short-term

366

00:15:24,990 --> 00:15:23,110

memory compromise to the point that she

367

00:15:26,700 --> 00:15:25,000

couldn't remember top of the page to the

368

00:15:28,470 --> 00:15:26,710

bottom of the page now she can remember

369

00:15:32,100 --> 00:15:28,480

what she had for breakfast today and

370

00:15:35,390 --> 00:15:32,110

yesterday some of us couldn't do that so

371

00:15:38,590 --> 00:15:35,400

that's a bit of a game she

372

00:15:41,150 --> 00:15:38,600

is commenting more and her comments are

373

00:15:42,920 --> 00:15:41,160

spontaneous they're insightful they're

374

00:15:45,530 --> 00:15:42,930

appropriate and they are better

375

00:15:49,160 --> 00:15:45,540

articulated so she's kind of pulling

376

00:15:51,170 --> 00:15:49,170

into society a little bit better 260z

377

00:15:55,220 --> 00:15:51,180

look it's still calmer that is still a

378

00:15:57,470 --> 00:15:55,230

big deal in the father's estimation this

379

00:15:58,850 --> 00:15:57,480

is very interesting about this improved

380

00:16:02,090 --> 00:15:58,860

organizational skills

381

00:16:06,500 --> 00:16:02,100

she had an art therapist come in for his

382

00:16:09,530 --> 00:16:06,510

first session after he left she composed

383

00:16:11,630 --> 00:16:09,540

an email to him that said very simply

384

00:16:14,300 --> 00:16:11,640

thank you very much for coming to my

385

00:16:16,910 --> 00:16:14,310

house I appreciated your being here

386

00:16:20,060 --> 00:16:16,920

we had fun I look forward to your coming

387

00:16:23,360 --> 00:16:20,070

again the big deal about this is that

388

00:16:27,140 --> 00:16:23,370

she was never before able to compose or

389

00:16:28,610 --> 00:16:27,150

send an email so that's the organization

390

00:16:31,910 --> 00:16:28,620

skill we're talking letter that her

391

00:16:33,740 --> 00:16:31,920

father is talking about and the sentence

392

00:16:36,020 --> 00:16:33,750

that the father was nice enough to share

393

00:16:36,980 --> 00:16:36,030

the email with me and it is really one

394

00:16:41,000 --> 00:16:36,990

that you would think would have been

395

00:16:42,770 --> 00:16:41,010

written by a I don't know seven or eight

396

00:16:45,140 --> 00:16:42,780

or nine year old very short sentences

397

00:16:47,270 --> 00:16:45,150

short choppy subject-verb so but you got

398

00:16:49,520 --> 00:16:47,280

the point across and that's brand-new

399

00:16:52,850 --> 00:16:49,530

and the kayaking and the water therapy

400

00:16:56,170 --> 00:16:52,860

are new to her and she initiated those

401
00:16:59,930 --> 00:16:56,180
with her friends nobody else did that

402
00:17:02,300 --> 00:16:59,940
289 days is the last report we have from

403
00:17:03,530 --> 00:17:02,310
her this is about 40 days ago so

404
00:17:05,180 --> 00:17:03,540
sometime in the next couple of weeks

405
00:17:06,710 --> 00:17:05,190
we'll hear another one and we'll receive

406
00:17:08,990 --> 00:17:06,720
another one but look what's happened

407
00:17:10,430 --> 00:17:09,000
still calmer for some reason or other

408
00:17:12,440 --> 00:17:10,440
she started planting a garden and

409
00:17:14,320 --> 00:17:12,450
watering it and this business about

410
00:17:17,860 --> 00:17:14,330
doing chores around the house is

411
00:17:20,870 --> 00:17:17,870
interesting in the fact that without

412
00:17:23,720 --> 00:17:20,880
without prompting and without being led

413
00:17:26,210 --> 00:17:23,730

to do them she didn't do them before now

414

00:17:28,010 --> 00:17:26,220

she does them spontaneously the father

415

00:17:30,170 --> 00:17:28,020

called me and said you know what's

416

00:17:32,090 --> 00:17:30,180

really fun to see is for the first time

417

00:17:36,160 --> 00:17:32,100

ever she put soap in the dishwashing

418

00:17:39,620 --> 00:17:36,170

machine she couldn't do that before so

419

00:17:42,980 --> 00:17:39,630

conclusion it looks like to us that SLO

420

00:17:45,200 --> 00:17:42,990

has some utility for both acute and

421

00:17:47,510 --> 00:17:45,210

chronic traumatic brain injury we think

422

00:17:49,460 --> 00:17:47,520

this has a great deal of possibilities

423

00:17:51,440 --> 00:17:49,470

again effects are seeing

424

00:17:52,909 --> 00:17:51,450

in just a matter of a few days in some

425

00:17:55,640 --> 00:17:52,919

cases like the lady falling off her

426

00:17:56,720 --> 00:17:55,650

horse and having headache other times it

427

00:17:59,990 --> 00:17:56,730

takes a little bit longer to see a

428

00:18:03,770 --> 00:18:00,000

response that third dot point is really

429

00:18:06,620 --> 00:18:03,780

important that is healing continues as

430

00:18:08,720 --> 00:18:06,630

we saw in this girl for months so it's

431

00:18:10,430 --> 00:18:08,730

not a matter everything that heals and

432

00:18:11,510 --> 00:18:10,440

that's the end of it healing can go on

433

00:18:13,490 --> 00:18:11,520

for a long long time

434

00:18:14,630 --> 00:18:13,500

I suspect the next report from the

435

00:18:16,430 --> 00:18:14,640

father is going to show that there's

436

00:18:18,770 --> 00:18:16,440

further improvement in his daughter and

437

00:18:22,279 --> 00:18:18,780

it doesn't matter how old the injuries

438

00:18:24,140 --> 00:18:22,289

are this is a reversible disease and

439

00:18:26,659 --> 00:18:24,150

thank goodness it's safe to prove that

440

00:18:30,230 --> 00:18:26,669

other than just anecdotally like this we

441

00:18:32,360 --> 00:18:30,240

did do some animal studies and we put my

442

00:18:35,930 --> 00:18:32,370

IV injection into rats 7 consecutive

443

00:18:37,700 --> 00:18:35,940

days SLO 5000 times more concentrated

444

00:18:40,850 --> 00:18:37,710

than what these patients are getting and

445

00:18:43,430 --> 00:18:40,860

no adverse responses so what we're going

446

00:18:46,700 --> 00:18:43,440

to do we're raising money now to conduct

447

00:18:47,930 --> 00:18:46,710

from former a formal FDA trials these

448

00:18:49,580 --> 00:18:47,940

are some of the parameters we'll measure

449

00:18:51,620 --> 00:18:49,590

and the patients and that are enrolled

450

00:18:53,570 --> 00:18:51,630

in the trial will license a product out

451
00:18:56,480 --> 00:18:53,580
to some big companies that'll screw it

452
00:18:58,700 --> 00:18:56,490
up somehow and with any luck we'll get

453
00:19:04,850 --> 00:18:58,710
it out to the people that need it and

454
00:19:14,870 --> 00:19:04,860
that's the end of that so if there any

455
00:19:21,620 --> 00:19:18,409
a bit of a clarification please do you

456
00:19:23,690 --> 00:19:21,630
know do you know when this fellow who's

457
00:19:27,350 --> 00:19:23,700
been writing all these reports uses the

458
00:19:30,230 --> 00:19:27,360
phrase still calmer does that mean even

459
00:19:32,840 --> 00:19:30,240
calmer than last time or just continuing

460
00:19:34,520 --> 00:19:32,850
to be calmer than in there pathological

461
00:19:36,320 --> 00:19:34,530
state they reach a base which we would

462
00:19:38,899 --> 00:19:36,330
call normal it's not as if they become

463
00:19:42,770 --> 00:19:38,909

comatose unresponsive or anything of

464

00:19:47,360 --> 00:19:42,780

that sort you had some very nice control

465

00:19:50,029 --> 00:19:47,370

data in the animal model in the in the

466

00:19:52,010 --> 00:19:50,039

patients in the humans did you have any

467

00:19:54,590 --> 00:19:52,020

any control data there the placebo

468

00:19:57,289 --> 00:19:54,600

effect which is a biological effect I

469

00:20:01,100 --> 00:19:57,299

fully believe that can be huge do you

470

00:20:02,870 --> 00:20:01,110

have any patients or any cases where

471

00:20:05,150 --> 00:20:02,880

you've done this in

472

00:20:06,920 --> 00:20:05,160

old matter or have you used controls at

473

00:20:11,090 --> 00:20:06,930

all no and there are a couple of reasons

474

00:20:12,350 --> 00:20:11,100

for that the iris and our experience

475

00:20:14,720 --> 00:20:12,360

with these patients the patients are

476

00:20:16,760 --> 00:20:14,730

their own control we have not done any

477

00:20:18,860 --> 00:20:16,770

placebo work because this is not an FDA

478

00:20:20,750 --> 00:20:18,870

study we're just trying to treat

479

00:20:22,820 --> 00:20:20,760

patients and get them better in the FDA

480

00:20:25,190 --> 00:20:22,830

study that we're proposing there will be

481

00:20:26,870 --> 00:20:25,200

controls of the sort you're asking of

482

00:20:29,060 --> 00:20:26,880

yes because I think that's an important

483

00:20:32,500 --> 00:20:29,070

caution here because if the patients are

484

00:20:34,880 --> 00:20:32,510

their own control the lesea bow effect

485

00:20:37,340 --> 00:20:34,890

I'm not saying it is the placebo effect

486

00:20:38,720 --> 00:20:37,350

but we can't rule that out you can't

487

00:20:41,800 --> 00:20:38,730

rule it out it's a little unusual to

488

00:20:44,600 --> 00:20:41,810

have a placebo effect lasting 289 days

489

00:20:50,720 --> 00:20:44,610

that's a long pussy-boy effect it can

490

00:20:53,240 --> 00:20:50,730

happen not to argue not too often yes

491

00:20:55,460 --> 00:20:53,250

John are you giving one initial dosers

492

00:20:57,590 --> 00:20:55,470

their dosage ongoing they take a

493

00:20:59,030 --> 00:20:57,600

sublingual drop four times a day one

494

00:21:03,050 --> 00:20:59,040

drop under the tongue four times a day

495

00:21:04,220 --> 00:21:03,060

and have you done any imaging - no we

496

00:21:06,200 --> 00:21:04,230

haven't had the funds to do that but

497

00:21:11,090 --> 00:21:06,210

that's part of the proposed FDA try

498

00:21:14,090 --> 00:21:11,100

thank you in the streptococcus organism

499

00:21:14,810 --> 00:21:14,100

the exotoxin before it's oxidized is its

500

00:21:16,760 --> 00:21:14,820

purpose

501
00:21:20,570 --> 00:21:16,770
- that organism just to cause tissue

502
00:21:23,330 --> 00:21:20,580
damage so that it's more infectious the

503
00:21:25,490 --> 00:21:23,340
Toyotas of all the compounds in all of

504
00:21:29,150 --> 00:21:25,500
biology what made you think that that

505
00:21:31,640 --> 00:21:29,160
would have an effect on this when you

506
00:21:34,280 --> 00:21:31,650
have thought the same haha not at the

507
00:21:40,160 --> 00:21:34,290
time I had no I wouldn't know what else

508
00:21:47,240 --> 00:21:40,170
to use it's true strictly by accident

509
00:21:50,360 --> 00:21:47,250
okay i I don't mean to to be coy about

510
00:21:53,360 --> 00:21:50,370
that if we got we have two minutes and I

511
00:21:54,800 --> 00:21:53,370
can explain it very quickly there was a

512
00:21:57,350 --> 00:21:54,810
study done at Brown University Medical

513
00:22:01,060 --> 00:21:57,360

School a few years ago that showed that

514

00:22:04,730 --> 00:22:01,070

patients that have movement disorders

515

00:22:08,360 --> 00:22:04,740

have a history of repeated or chronic

516

00:22:10,310 --> 00:22:08,370

strep infection so I thought well those

517

00:22:11,600 --> 00:22:10,320

patients must have some problem with the

518

00:22:13,730 --> 00:22:11,610

strep still in their body or maybe

519

00:22:16,280 --> 00:22:13,740

something the cross reacts my big idea

520

00:22:16,760 --> 00:22:16,290

was that why don't we use a fraction

521

00:22:18,560 --> 00:22:16,770

list

522

00:22:21,770 --> 00:22:18,570

organism and treat those movement

523

00:22:22,880 --> 00:22:21,780

disorders just for fun so I asked some

524

00:22:25,370 --> 00:22:22,890

of the physicians in our group if they

525

00:22:26,840 --> 00:22:25,380

had any such patients one had a patient

526

00:22:28,160 --> 00:22:26,850

like that that a horrible tick to the

527

00:22:29,960 --> 00:22:28,170

head like this

528

00:22:31,630 --> 00:22:29,970

it was just sat with that patient in two

529

00:22:34,460 --> 00:22:31,640

minutes you'd be going like this too and

530

00:22:36,790 --> 00:22:34,470

that patient was asked if she would be

531

00:22:39,320 --> 00:22:36,800

willing to take this product that we had

532

00:22:42,410 --> 00:22:39,330

experimentally that we thought might

533

00:22:43,940 --> 00:22:42,420

help her tick and we were confident it

534

00:22:46,790 --> 00:22:43,950

would be safe we had no idea if it would

535

00:22:49,340 --> 00:22:46,800

have any biological effect and she being

536

00:22:52,150 --> 00:22:49,350

a nice lady agreed to do it and she came

537

00:22:53,870 --> 00:22:52,160

back four weeks later and the tick was

538

00:22:56,510 --> 00:22:53,880

remarkably reduced but not eliminated

539

00:22:58,340 --> 00:22:56,520

but the attending physician said did you

540

00:22:59,750 --> 00:22:58,350

see anything else good or bad happen and

541

00:23:00,080 --> 00:22:59,760

she about punch him said yeah look at

542

00:23:04,100 --> 00:23:00,090

that

543

00:23:06,710 --> 00:23:04,110

and nice hand what about it and she said

544

00:23:08,750 --> 00:23:06,720

well she says I'm 34 years old when I

545

00:23:11,270 --> 00:23:08,760

was nine years old I pulled a sauce pan

546

00:23:13,820 --> 00:23:11,280

of boiling water off my mother's stove

547

00:23:15,700 --> 00:23:13,830

and it went over my hands and scarred my

548

00:23:18,530 --> 00:23:15,710

knuckles and the scars are all gone

549

00:23:19,730 --> 00:23:18,540

that's how we found it okay okay and I

550

00:23:22,010 --> 00:23:19,740

just want to go on record as saying

551
00:23:24,290 --> 00:23:22,020
animal models are cruel and terrible and

552
00:23:25,070 --> 00:23:24,300
hopefully the FDA will change and you

553
00:23:28,940 --> 00:23:25,080
won't have to do that

554
00:23:30,530 --> 00:23:28,950
good luck them all with you with respect

555
00:23:31,970 --> 00:23:30,540
to the to the mechanism I know you can't

556
00:23:33,350 --> 00:23:31,980
speak of this in the in the human model

557
00:23:35,690 --> 00:23:33,360
at the rat model so are you suggesting

558
00:23:37,669 --> 00:23:35,700
that the reduced inflammation is

559
00:23:39,200 --> 00:23:37,679
facilitating synapse synaptogenesis

560
00:23:41,870 --> 00:23:39,210
which is kind of helping the overall

561
00:23:45,020 --> 00:23:41,880
connectivity or no we're looking more

562
00:23:46,280 --> 00:23:45,030
that gliosis the scarring is interfering

563
00:23:49,610 --> 00:23:46,290

what normal transmission of messages

564

00:23:51,740 --> 00:23:49,620

from cell to cell that's it and same

565

00:23:53,690 --> 00:23:51,750

thing with the chronic situation so if

566

00:23:55,880 --> 00:23:53,700

we can either prevent that tissue from

567

00:23:57,860 --> 00:23:55,890

the scar interfering material from

568

00:23:59,720 --> 00:23:57,870

forming or eliminate that which is

569

00:24:01,910 --> 00:23:59,730

already formed the messages can get

570

00:24:03,950 --> 00:24:01,920

through and away we go we do not think

571

00:24:06,250 --> 00:24:03,960

we're doing anything to induce neuronal

572

00:24:09,860 --> 00:24:06,260

growth or anything of that sort

573

00:24:11,990 --> 00:24:09,870

I think we're clearing that by getting

574

00:24:16,280 --> 00:24:12,000

rid of some of this damage caused by the

575

00:24:18,410 --> 00:24:16,290

inflammation yep I'm excited about this

576
00:24:21,910 --> 00:24:18,420
because my cousin's daughter just got

577
00:24:25,430 --> 00:24:21,920
involved in one of those accidents and

578
00:24:26,900 --> 00:24:25,440
but as a massage therapist I noticed I

579
00:24:29,360 --> 00:24:26,910
work with a lot of people with the

580
00:24:30,380 --> 00:24:29,370
chronic TBI and the back of the head and

581
00:24:33,530 --> 00:24:30,390
the muscles here in the

582
00:24:35,570 --> 00:24:33,540
collagen and is all seems to be part of

583
00:24:37,520 --> 00:24:35,580
it and constricting on the cranial

584
00:24:39,290 --> 00:24:37,530
nerves just because of the muscle thing

585
00:24:43,250 --> 00:24:39,300
and have you looked at that in terms of

586
00:24:45,230 --> 00:24:43,260
that you know we haven't but since we

587
00:24:47,480 --> 00:24:45,240
know that the SLO works on those kinds

588
00:24:49,040 --> 00:24:47,490

of scars also that might very well be a

589

00:24:51,080 --> 00:24:49,050

component to the recovery we're seeing

590

00:24:54,130 --> 00:24:51,090

and I look forward to the micro glial

591

00:24:57,350 --> 00:24:54,140

aspect to that seems very important I

592

00:24:58,880 --> 00:24:57,360

have several questions number one but

593

00:25:02,300 --> 00:24:58,890

first I want to state I think it's great

594

00:25:04,010 --> 00:25:02,310

you're working on this and because I

595

00:25:07,370 --> 00:25:04,020

have a friend who lost his son to

596

00:25:08,210 --> 00:25:07,380

suicide because of this are you going to

597

00:25:10,280 --> 00:25:08,220

do I understand you're going to do

598

00:25:13,400 --> 00:25:10,290

imaging are you gonna do QE II G's as

599

00:25:15,980 --> 00:25:13,410

well whatever we have funds for okay

600

00:25:18,500 --> 00:25:15,990

there's a lot to be done and is there an

601
00:25:21,440 --> 00:25:18,510
age limit to how young you will give

602
00:25:23,630 --> 00:25:21,450
this to somebody well there might be the

603
00:25:25,910 --> 00:25:23,640
youngest we've ever given is about six

604
00:25:29,990 --> 00:25:25,920
weeks of age and that was without any

605
00:25:31,610 --> 00:25:30,000
problem okay thank you I must have

606
00:25:34,280 --> 00:25:31,620
missed this did is this an ongoing

607
00:25:37,130 --> 00:25:34,290
treatment like for 200 days or well

608
00:25:39,980 --> 00:25:37,140
there's no no set limit until the person

609
00:25:42,560 --> 00:25:39,990
plateaus and gets tired of taking drops

610
00:25:43,880 --> 00:25:42,570
they keep taking them so it once healing

611
00:25:47,500 --> 00:25:43,890
is occurred there's no reason to think

612
00:25:49,700 --> 00:25:47,510
they're going to relapse with scars but

613
00:25:53,150 --> 00:25:49,710

the clinical trial will be a 90 day

614

00:25:55,730 --> 00:25:53,160

trial but just one patient as you can

615

00:25:56,870 --> 00:25:55,740

see is going close to a year now and we

616

00:25:58,010 --> 00:25:56,880

have other patients that have gone as

617

00:25:59,690 --> 00:25:58,020

many as four years some of the old

618

00:26:02,570 --> 00:25:59,700

football continuing the same treatment

619

00:26:05,210 --> 00:26:02,580

yep okay yeah although usually after a

620

00:26:06,500 --> 00:26:05,220

few months they don't hit four times a

621

00:26:07,760 --> 00:26:06,510

day they might get one in the morning

622

00:26:10,610 --> 00:26:07,770

and one in the evening something like

623

00:26:12,590 --> 00:26:10,620

that right on time

624

00:26:13,300 --> 00:26:12,600

thank you very much big round of