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Research Article

Cyclist Neck "The Prevalence of Cervical Spine Degeneration in Cyclists Using Different Handlebars"

Harvey R. Manes*

Department of Orthopedics, Queens Surgical Center, USA

***Corresponding author**
Harvey R. Manes, Department of Orthopedics, Queens Surgical Center, New York, USA, Email: hm2001@optonline.net

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Abstract

Cyclists that use drop handlebars are forced to hyperextend their c-spine in order to be able to view the road in front of them. Contrarily, cyclists that use a standard handlebar can view the road without the need to hyperextend. It is the contentions of this article that hyper-extension of the c-spine for long periods can result in premature c-spine degeneration. The article is a retrospective study that compares the prevalence of cervical spine degeneration in bicyclist using standard vs. drop handlebars.

INTRODUCTION

In order to reduce wind resistance and go faster, many recreational and experiencedcyclists ride bicycles that have dropped handlebars (bull-whips) and in order to see the road, thec-spine is forced to be held in a position of approximately 35-45 degrees of hyper-extension. At times the cyclist may changeto a high hand position (on top of the handlebar), but the hyper-extended position is usually held continuously for the duration of the ride. In comparison, the cyclist using the standard or flat handlebars can place the cervical spine in a more normal 10-15 degrees of extension (see Figures 1,2). The hypothesis of this article is that cycling with dropped handlebars can be very hard on the upper back and neck and can result in the development of premature cervical spine degeneration or a condition that can be called "Cyclist Neck".This article compares the prevalence of c-spine degeneration in cyclist that use drop handlebars versus those cyclist that use flat handlebars. Degeneration consists of narrowing of the joint space, osteophyte formation, facet hypertrophy, and sclerosis of vertebral end plates [1-3]. There are no other articles in the literature that broach this subject.

METHOD

100 male bicyclists out of 1000 members from the L.I. Bicycle Club, Huntington Bicycle Club, and Suffolk Bicycling Riders Association, were chosen at random, agreed to participate, and provided written consent. The age group was 35-42, otherwise healthy males who have never been diagnosed with any form of arthritis or any condition regarding the cervical spine.Only those bicyclist who ride at least twice per week, minimum 2 hours per ride, for at least 10 years were included in the study. 50 male cyclists who use drop (bull whip) handlebarswere compared to 50 male cyclistsusing standard flat (upright) handlebars to determine evidence of degenerative cervical spine disease based on X-ray examination.There was no significant between the two groups regarding height, weight, amount of riding performed or speed of riding. X-rays were taken in the a/p, lateral and oblique views (Proteus XR-a) of the c-spine and read by the same orthopedist and radiologist. Degeneration consists of narrowing of the joint space, osteophyte formation, facet hypertrophy, and sclerosis of vertebral end plates [1-3]. If there was a difference in opinion a third radiologist was consulted.Clinical signs and symptoms of cervical spondylosis were not studied in this article.

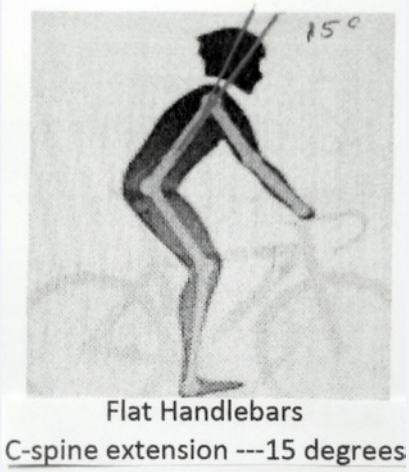

Figure 1 Bicyclist handling Flat handlebars.

Figure 2 Bicyclist handling Drop handlebars.

RESULTS

In this study the number of cyclists with X-ray evidence of c-spine degeneration was 15 out of 50, or 30%. The number of cyclists using drop handlebars with degeneration was 23 out of 50 or 46%. There was an increase of 53% of c-spine degeneration in cyclists using drop handlebars.

DISCUSSION

Experienced bicyclists tend to use 2 types of handlebars; 1) standard handlebars and 2) drop handlebars. By using drop handlebars the rider flexes his lumbar spineforward and extends his c-spine in order obtain an aerodynamic advantage, so that there is a reduction in wind resistance and lessenergy is needed to go faster [4].The upright (standard) handlebars are less aerodynamic and therefore more energy is required to go the same speed and distance. However, the disadvantage of using the drop type of handlebaris that the c-spine is forced into extreme hyper-extension (35-45degrees) in order to see the road. By keeping the neck in this unnatural hyper-extended position for extended periods of time, it is the author's hypothesis that there is increase wear and tear on the c-spine as compared to using the standard handlebars.In the normal population of 35-42 year old men, the prevalence of c-spine degeneration is approximately 25-37% [5-7] which corresponds to those cyclists using standards handlebars. However in those cyclists using drop handlebars the prevalence of c-spine degeneration was 46% which is an increase of 53%.

CONCLUSION

This study finds that cyclist that use drop handlebars had an increased prevalence of cervical spine degeneration of 53%. Cyclists should be warned of the possible risks of using drop handlebars versus standard handlebars.

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