Association between Body Weight and Gait Score of Broiler Meat Chicken

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The global demand for chicken meat is increasing and new poultry strains have been developed by genetic improvement targeting production traits to fulfill the higher demand. Since, genetic improvements have not focused on improving skeletal confirmation in parallel to production traits; birds can get leg deformities disturbing their walking pattern which can manifest as higher gait score (GS). Study focused to identify the association between body weight (BW) and GS in broiler chicken. A total of 100, day-old Cobb chicks (76-female; 24-male) were randomly selected and managed conditions. GS with 0(zero) to 5(severe) levels and BW of the birds were recorded separately at the age day-14, day-21, day-28 and day-35. Spearman correlation was calculated between BW and GS at each sampling day using MINITAB-17 and mean BWs difference of birds in each GS category was obtained by repeated measures of ANOVA (RMANOVA) using SAS-9.2. Frequency of birds in each GS category was obtained. Significant weak positive correlation between BW and GS is reported only at day-35 (Spearman-Rho=0.289; $P<0.05$). When consider the sex, similar significant weak positive correlation is observed in females (Spearman-Rho=0.364; $P<0.05$) at day-35 reflecting correlations observed in whole flock at day-35, may have mainly contributed from females. RMANOVA revealed a significant effect of time and GS×time interaction on BW ($P<0.05$). Significantly higher BW ($P<0.05$) has observed in birds belonging to the higher GS categories at day-35 (GS0=1660.83±59.13; GS2=1796.49±38.65; GS3=1913.39±30.16; GS4=1803.00±111.18) indicating BW of birds has directly affected on their walking pattern. Frequency of birds belonging to GS-0 is continuously declining from 99% at day-14 to 15.2% at day-35. Further, more than 50% of birds showed GS-3 (48.5%) and GS-4 (3%) at day-35 reflecting without external visible changes in the skeletal confirmation; birds are suffering from pain in walking which is an important animal welfare issue. None of the birds reported GS-5 throughout the experiment. It can be concluded that increase BW leads to chronic pain which reflects as higher GS. At slaughtering age, birds are suffering from pain in walking without changes in external skeletal confirmation. Future research can be focus on genetic improvement of skeletal confirmation of birds to tolerate increased BW.

Keywords: Body weight; Broilers; Chicken; Gait score