

Incidence of Splayleg in purebred and crossbred Landrace piglets

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Journal of Livestock Science (ISSN online 2277-6214) 14: 31-34
Received on 30/11/22; Accepted on 10/1/23; Published on 27/1/23
doi. 10.33259/JLivestSci.2023.31-34

Abstract

Splayleg condition is generally considered as one of the most frequent developmental defects in piglets. This condition is characterized by a lateral abduction of the hind limbs in newly born piglets. This leads to an impaired ability of the piglets to walk or even stand and increases the risk of being crushed by the sow or to die of starvation. An investigation was conducted at Swine Production Farm, IVRI, Izatnagar, India to study the incidence of splayleg condition in purebred and crossbred Landrace pigs. Incidence of splayleg cases was significantly more ($P < 0.01$) in crossbred than purebred Landrace. Male piglets were more affected than females in both purebreds as well as crossbreds. Most of the piglets with splayleg conditions died within 4 days of birth. Incidence of splaylegs in piglets increased as the litter size increased. This condition might be due to a genetic influence.

Key words: Landrace; purebred; crossbred; piglets; splayleg,

Introduction

Incidence of splayleg cases in piglets was reported in commercial pig farms by Horguel and Lorenz (1979). The newborn piglet with splayleg is unable to hold the hind legs together. Affected piglets are unable to make access to teats of sow and subsequently die due to starvation. It is more common in the Landrace breed (Tomko, 1993). Disease is caused by immaturity of the muscle fibres in the hind legs, over the pelvis and occasionally in the front legs. The present study was conducted to compare the incidence of splayleg condition in two genetic groups viz., Crossbred (81.25% Landrace and 18.75% Desi) and pure Landrace pigs, and to find out effect of sires on incidence of splayleg in both the population in intensive rearing practices under tropical conditions.

Materials and Methods

The study was conducted on 1190 crossbred (81.25% Landrace and 18.75% Local) and 309 Landrace piglets born out of 120 crossbred and 31 pure Landrace sows, respectively at Swine Production Farm, Indian Veterinary Research Institute, Izatnagar, Bareilly (28°22'N and 79°24'E) during 2013 to 2016. Sows were reared under standard hygienic and uniform managerial conditions during the period under study. All the sows with piglets were kept on roughened concrete floor in the farrowing pen and an open area behind (run). The provision of feed and water was similar throughout the study. The splayleg condition in piglets was diagnosed by physical examination just after birth. The extension of both the hind legs laterally was confirmed as splayleg piglets (Fig 1). The data generated were analyzed using regression analysis and chi-square test as per standard procedure (Snedecor and Cochran, 1994). Four sires viz., brand No-L1100, L1102, L1104 and L1105 and their male progenies were utilized in breeding programme in both the genetic groups. L1104 and L1105 were half-sibs. The proportion of incidence of splaylegs sire line wise was also studied.



Fig 1. Piglet with splayleg condition

Results and Discussion

Effect of breed

Of the total 1190 crossbred piglets examined, 65 piglets were affected by splay leg conditions (Table 1). In the Landrace breed, 12 piglets were diagnosed physically as splayleg out of 309 piglets born. Overall, splayleg condition in crossbred piglets were significantly ($P<0.01$) more than Landrace piglets (5.46 and 3.88%, respectively). Similar observations were also reported by Vogt et al., (1984) on frequency of splayleg among breeds. Papatsiros (2012) reported 26% increase of splayleg during a period of 7 years.

Effect of sex

In crossbreds male piglets having splayleg were significantly ($P<0.01$) more than Landrace male piglets (3.70 and 2.27%, respectively). However, proportion of female splayleg piglets did not have any significant difference between two groups. Vogt et al. (loc.cit) reported that frequency of males with splayleg condition was more compared to splayleg female piglets. In the present study, significantly higher percent of male piglets ($P<0.01$) had splayleg condition than female piglets in pure and crossbred piglets ($X^2=7.28$).

Table 1: Incidence of splayleg piglets (No.) in two genetic groups

Parameters	Crossbred	Pure Landrace	Z value
Total farrowings	120	31	
<i>Piglets born (No.)</i>			
Male	612 (51.43)	168 (54.37)	2.772**
Female	578 (48.57)	141(45.63)	2.279**
Total	1190	309	
<i>Splayleg cases (No.)</i>			
Male	44 (67.69)	7(58.33)	1.737*
Female	21 (32.31)	5 (41.67)	1.737*
Total	65	12	2.769**
<i>Splayleg cases on the basis of birth weight (kg)</i>			
<0.5	1(1.54)	0.00	
0.5- 1.0	40 (61.54)	3 (25)	10.00**
1- 1.5	23 (35.38)	9 (75)	4.05**
>1.5	1(1.54)	0.00	
<i>Splayleg cases on the basis of Litter size at birth</i>			
<8	2 (3.08)	0.00	
8-10	26 (40)	3 (25)	6.532**
>10	37 (66.9)	9 (75)	7.56**
<i>Splayleg cases on the basis of days (age) in alive</i>			
1 to 2	20 (30.77)	8 (66.67)	3.612**
3 to 4	25 (38.46)	2 (16.67)	6.606**
5 to 6	7 (10.77)	0.00	
6 to 42	0.00	0.00	
> 42	3 (4.62)	0.00	
Alive and disposed through sale	10 (15.38)	2 (16.67)	3.164**
<i>Overall splayleg cases (%) in the population</i>			
Male	3.70	2.27	3.053**
Female	1.76	1.62	0.416 ^{NS}
Overall	5.46	3.88	2.772**

Figures in parentheses indicate percent in the population
NS Nonsignificant, * Significant at 5% and ** Significant at 1%

Table 2: Incidence of splayleg piglets sire-wise in the population

Sire line	L 1100	L 1102	L 1104	L 1105
<i>No. of piglets born (Crossbred)</i>				
Male	182	81	113	236
Female	175	89	122	192
Overall	357	170	235	428
<i>Splayleg cases (Crossbred)</i>				
Male	8 (4.40)	17 (20.99)	6 (5.31)	13 (5.51)
Female	4 (2.29)	8 (8.99)	4 (3.28)	5 (2.60)
Overall	12 (3.36)	25 (14.71)	10 (4.26)	18 (4.21)
<i>No. of piglets born (Purebred)</i>				
Male	30	70	48	20
Female	23	70	31	17
Overall	53	140	79	37
<i>Splayleg cases (Purebred)</i>				
Male	0.00 (0.00)	6 (8.57)	1 (2.08)	0.00 (0.00)
Female	0.00 (0.00)	5 (7.14)	0.00 (0.00)	0.00 (0.00)
Overall	0.00 (0.00)	11 (7.86)	1(1.27)	0.00 (0.00)

Figures in parentheses indicate percent in the population

Effect of birth weight and litter size

Crossbred piglets were significantly ($P<0.01$) more affected than Landrace piglets between 0.5 to 1.0 and 1.0 to 1.5 kg body weight at birth. In crossbred piglets, 61.5% splaylegs were between 0.5 to 1.0 kg of body weight at birth and 35.4% were between 1 to 1.5 kg of body weight at birth. However, in Landrace, it was 25% and 75% between 0.5 to 1.0 and 1.0 to 1.5 kg of body weight at birth, respectively. Litter size had significant effect ($P<0.01$) on incidence of splayleg. In sows having litter size more than 10 contributed 67 and 75% splaylegs in crossbreds and Landrace, respectively. Horugel and Lorenz (loc.cit) also observed that incidence of splayleg increased with decreasing birth weight, and thus with increasing litter size.

Effect of splayleg on mortality

Significantly higher percent of death in Landrace piglets ($P<0.01$) was there within 1 to 2 days of birth as compared to crossbred piglets (66.7 & 30.8 % in Landrace and crossbreds, respectively). However, mortality percent was 38.5 and 16.7 within 3 to 4 days in crossbreds and Landrace, respectively. Out of 65 affected crossbred piglets, only 4.62% piglets were saved more than 42 days, but died later on. However, with proper care and treatment regimes, developed at the center 15.38% crossbred and 16.7% Landrace piglets with splayleg conditions survived till weaning and were disposed of through sale. Hamori (1978) reported 8.53% splayleg cases out of 16002 piglets born and mortality rate was 73-74% among splayleg.

Sire effect

During the recording period, 357, 170, 235 and 428 crossbred piglets were born to four sires L1100, L1102, L1104 and L1105, respectively (Table 2). Out of total 65 piglets born with splayleg condition, there were 12, 25, 10 and 18 piglets belong to sire lines L1100, L1102, L1104 & L1105, respectively. Maximum percentage of crossbred piglets with splayleg were born out of L1102 (14.71%) followed by L1104 (4.26%), L1105 (4.21%) and L1100 (3.36%). Almost similar observations were made in pure Landrace piglets born out of the four as given above. In both the genetic groups, out of four sires, L1102 contributed higher percentage of splayleg cases in the population. Higher incidence of splayleg to a particular boar line was also reported by Tomko (1993) in his studies. Papatsiros (2012) reported 18% higher increase of splayleg for a particular sire line.

Conclusion

Incidence of splayleg cases was significantly more ($P<0.01$) in crossbred than purebred Landrace. Male piglets were more affected than females in both purebreds as well as crossbreds. Most of the piglets with splayleg conditions died within 4 days of birth. Incidence of splaylegs in piglets increased as the litter size increased. This condition might be due to a genetic influence. Thus the farm management may concentrate on the proper sire line selection for decreasing this condition.

Acknowledgement

The authors are thankful to the Director, Indian Veterinary Research Institute, Izatnagar for the facilities and support provided to accomplish the research under All India Coordinated Research Project on Pigs, IVRI unit. The authors are also thankful to Mr. S.C. Saxena and Narendra Singh, supervisors for their help.

References

- 1) Horguel, K. and Lorenz, A. (1979). Congenital splayleg of piglets on a large pig breeding unit. Monatshefte for Veterinarmedizin., 34 (5) : 183.
- 2) Hamori, D.(1978) Incidence of myohypoplasia (splayleg) and other defects in newborn piglets. Magyar-Allatvosok-Lapja., 33(5): 295.
- 3) Papatsiros, V.G. (2012). The splay leg syndrome in piglets: A review. American J. of Animal and Veterinary Sciences, 7(2): 80-83.
- 4) Tomko, M. (1993). Influence of parental origin, litter size and sex on the frequency of splayleg in piglets. Acta- Veterinaria- Hungarica. 41(3-4): 329.
- 5) Vogt, D.W., Gipson, T.A., Akremi, B.,Dover, S and Ellersieck, M.R. (1984).Associations of sire, breed, birth weight, and sex in pigs with congenital splayleg. American J of Vetrinary Research 45(11): 2408.
- 6) Snedecor G W and Cochran W G. 1994. Statistical Methods, 8th Edn., Oxford and IBH Pub.Co.