

A Study of Milker's Callus in Milk Men

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Abstract: The study was conducted on 50 milkmen in Pondicherry, India to acquire first-hand information on age, sex, pattern of milking, number of years in milking profession, number of animals milked per day, average time taken for milking per animal and details of the lesions on their thumbs etc. It was observed that and the professional milkers were male and the female milkers milked only their own cows. All the milkmen were apparently healthy and followed only knuckling pattern of milking. Number of years in milking profession ranged from 12 to 30 and total number of animals milked per day ranged from 3 to 50. Average time taken for milking per animal was 8 minutes. Milker's calluses of different size were seen on the inter-phalangeal joint on the plantar surface of their thumbs. The size of the lesion (from a digital photograph using Imagej software) on the right thumb was bigger than that of the left thumb. Pain in hands along with back/shoulder pain while milking, was reported by all the milkers.

Keywords: Milkman, Milkers callus, Knuckling pattern, milking.

INTRODUCTION

Knuckling is a method of conventional milking practiced by most of the professional milkers [1, 2]. It is performed by exerting undue pressure on the teat by dorsal aspect of the thumb flexed at inter-phalangeal joint and palmar surface of the fingers along its length to express the milk out. It causes diffuse area of hyperkeratosis occurring as a normal physiological response to chronic, excessive pressure or friction on the skin. They can be a distinctive occupational stigmata when they occur on the hands.

The occurrence of calluses in the thumb in professional milkers is known as Milker's callus.

During the process of manual milking, the cow's teats are gripped between the dorsal aspect of the thumb, flexed at the interphalangeal joint and the palmar surface of the other fingers, exerting sufficient pressure along its length to express milk, this pattern of milking is known as Knuckling. In professional milkers this process is repeated several times a day and over the years this frictional trauma produces milker's callus [3]. The present study was conducted on 50 milk men to study the effect of knuckling pattern and the callus formation on the dorsal aspect of the thumb.

MATERIALS AND METHOD

A total of 50 milkmen randomly selected from Pondicherry, India milking several animals a day were taken for the present study. Milker's particulars viz;

professional milkman or owner of the animal, age, sex, method of milking, health status, number of years in milking profession, number of animals milked per day, average time taken for milking per animal, precautions taken before and after milking, method of restraining the animal while milking, sitting position of the milker related to animal while milking, frequency of milk flow disorder, treatment employed for milk flow disorder (if any), assessment of teat health status, details of lesions on the inter-phalangeal joint on the dorsum of both the thumbs, painful lesions or painless, size of the lesion (from the digital photograph using Imagej software), consistency and problem faced while milking were documented.

RESULTS AND DISCUSSION

Out of 50 milkers, 45 (90%) were male and 5 (10%) were female. All the males were professional milkers while females were milking only their own animals. Age of the milkers ranged from 31 to 45 years (Mean \pm S.E. = 38.05 ± 1.32). All of them followed only knuckling pattern of milking (Plate 1) and were apparently healthy. Number of years in milking profession varied from 12 to 30 years (Mean \pm S.E. = 20.27 ± 1.38) and number of animals milked per day ranged from 3 to 50 (29.25 ± 4.05). This explains chronic, excessive, pressure and friction on the skin causing lesions on their thumbs. Average time taken for milking per animal was between 5 to 15 minutes (Mean \pm S.E. = 8 ± 0.08). Those milkers who were in profession for more number of years were taking lesser time for milking per animal. Precautions taken before milking included washing the udder and teat with water by 36 milkers (72%), washing udder and teat with water and applying castor oil on hands by 6 (12%), no precaution by 5 (10%), and by

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using diluted solution of potassium permanganate by 3(6%) milkers. None of the milkers followed any post milking precaution like dipping the teat in antiseptic etc. Present findings are in accordance with Rathore *et al.* [2] who reported that majority of the milkers washed the udder and teat of the animal with water before milking. Restraining before milking by tying hindlimbs together was followed by all the milkers.



Plate 1: Knuckling method of milking.



Plate 2: Sitting position of milker related to animal while milking (Left side).

Sitting position of milker related to animal while milking was left side in 43 milkers (86%) and right side in 7milkers (14%). Milk flow disorders were seldom noticed by 25 (50%) of the milkers and it was frequently noticed by 25 (50%) of them. Treatment of milk flow disorder was not employed by 40 milkers (80%), treatment was employed by 10milkers (20%) which included intra-mammary infusion of Pendistrin-SH ointment in the affected teat by 4 milkers (40%) and by relieving the obstruction using teat siphon by 6 milkers (60%). Teat health was assessed by noticing reduced milkability by 29 milkers (58%), palpable lesions in the

teat by 11 milkers (22%) and pain evinced by the animal while milking by 10 milkers (20%).

Lesions on the inter-phalangeal joint on the dorsum of the thumbs included Milker's callus in all the milkers (Plate 3) and the callus was noticed with wound in 5 milkers (10%) (Plate 4). The lesions were non-painful in 45(90%) and painful in 5milker (10%) where wound was present. Because of chronic wear and tear, wound was noticed along with the callus. The size of the callus was measured from a digital photograph using Imagej



Plate 3: Milker's callus (Hard, broad based thickening at distal inter-phalangeal joint on the dorsal aspect of the thumbs).



Plate 4: Callus with wound on both the thumbs.



Plate 5: Measuring the size of the calluses using the software.

software (Plate 5). The average size (Mean \pm S.E.) of the milker's callus (cm^2) was 1.53 ± 0.06 on the right thumb and 1.48 ± 0.03 on the left thumb. Size of the milker's callus was bigger on right thumb than that on the left thumb since the right hand being the dominant hand, more pressure is applied compared to left hand. These findings of the lesions on the thumbs were in agreement with Vettrichevvel *et al.* [3].

On physical examination, the calluses were mostly single, non-tender, hard, hyperpigmented, broad-based thickening of different sizes with a rough, eroded surface. It was freely mobile and no restriction of movement of the underlying joint was noticed. As per the history taken from the affected milkers, it had started as an area of hyperpigmentation followed by soft swelling and eventually resulted in a hard swelling causing thickening of the skin, which had progressively increased in size over the years. In response to friction, there is a steady rate of increase in epidermal turnover and accumulation of thickened, vertically oriented collagen bundles in the papillary dermis, resulting in lichenification and callus formation [4]. Problem faced while milking included pain in hands while milking in all the milkers, along with either shoulder pain in 41 (82%) or back pain in 9 (8%) milkers. This indicates that knuckling method of milking causes pain in hands along with shoulder or back pain while milking. Milker's callus must be differentiated from the milker's nodule which is a zoonosis caused by parapox virus, also occurring on the fingers of milkers. It usually presents as a reddish-blue, firm, slightly tender nodule that later crusts and resolves spontaneously without scarring in 4-

6 weeks, usually without recurrence. Histologically, it is characterized by a multilocular vesicle in an acanthotic epidermis with intracytoplasmic inclusion bodies in the vacuolated epidermal cells; dilated capillaries and mononuclear cell infiltration in the dermis [5].

CONCLUSIONS

Knuckling method of conventional milking practiced by most of the professional milkers causes pain in hands while milking along with shoulder or back pain. Due to exerting undue pressure on the teat by dorsal aspect of the thumb flexed at inter-phalangeal joint and palmar surface of the fingers along its length to express the milk out, it causes milker's callus, which can be prevented by following full hand milking in cows.

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