Objective: To characterize motor overflow and mirror movements in patients with focal hand dystonia (FHD). Background: Motor overflow is an unintentional muscle contraction which accompanies, but is anatomically distinct from the primary dystonic movement. The overflow into muscles adjacent to the primary dystonic movement is called ipsilateral overflow; when it spreads to the opposite limb, it is called contralateral overflow. A dystonic movement or posture that is induced by a specific task, such as writing, performed by the contralateral homologous normal body part is defined as “mirror dystonia”. This phenomenological nosology has not been systematically studied in FHD.

Methods: We enrolled 30 patients with FHD and 40 normal controls. All subjects were videotaped while performing detailed neurological assessments for motor overflow movements and hand dystonia. The subjects were asked to write, draw a spiral, a straight line and a sine wave with each hand. They were also instructed to perform repetitive tasks including wrist flexion-extension, finger tapping, hand grasping, hand pronation-supination, and a finger-to-nose movement. The videotaped segments were randomized and assessed blindly by one rater, trained in using standardized criteria. The percentage of motor overflow and mirror movements were graded as 0-4 (Table 1). The severity of dystonia was also graded as 0-4 (Table 1). A correlation between the severity of dystonia (BFM) and motor overflow score was performed.

RESULTS: Ipsilateral overflow was identified in 7 (23.3%) FHD subjects and in 2 (5%) control subjects (P=0.03), mirror dystonia in 20 (66.7%) FHD subjects and in 12 (30%) control (P=0.004), and contralateral overflow in 1 FHD (3.3%) and in 2 control subjects (5%) (Table 1). The average dystonia score in FHD was 1.4±1.2 and the mean overflow score was 1.0±0.8. The more severity of dystonia, the more overflow movements appear in multiple tasks (r=0.713, P=0.001) (Figure 1).

DISCUSSIONS: Thirty consecutive patients with task-specific hand dystonia (age 51.0±11.8 years, male 46.7%) and 40 normal controls (age 58.7±7.4 years, male 70.0%) were included in this study (Amades et al, 1984). Ipsilateral motor overflow was unilaterally associated with the primary dystonic movement in the FHD patients (P=0.003). Ipsilateral overflow was identified in 7 (23.3%) FHD subjects and in 2 (5%) control subjects (P=0.03), mirror dystonia in 20 (66.7%) FHD subjects and in 12 (30%) control subjects (P=0.004), and contralateral overflow in 1 FHD (3.3%) and in 2 control subjects (5%) (Table 1). The average dystonia score in FHD was 1.4±1.2 and the mean overflow score was 1.0±0.8 in FHD. The more severity of dystonia, the more overflow movements appear in multiple tasks (r=0.713, P=0.001) (Figure 1). Writing with non-affected hand had 56.7% sensitivity to detect mirror dystonia, specificity of 70%, and the positive predictive value (PPV) of 58.8% (P=0.03) Finger tapping, hand pronation-supination and finger-to-nose test had a 100% PPV and specificity. (Table 2) Of the normal controls, who denied any difficulty handwriting or abnormal hand postures, 29% had some evidence of dystonia with the mean dystonia score of 1.3±0.5.

REFERENCES: