

6/33 (18.2%) in mild, moderate and severe CTS respectively (Table 2 and 3).

### Discussion

Carpal tunnel syndrome affects almost 5% of the population and is most common in middle-aged women, in about 70% of the cases; it is bilateral and is prevalent in the dominant hand.

The sensitivities of all the provocative tests are different according to the levels of electrodiagnostic severity <sup>(7)</sup>. In the present study Positive Tinel's sign only was seen in (25%) and Positive Phalen's maneuver only in (28%).

Both Tinel's sign and Phalen's maneuver positive at the same time were seen in (47%). Total Tinel's sign was seen in 72% and total Phalen's maneuver positive was seen in 75%. These results is higher than the results of other studies that showed 62% and 45% of carpal tunnel syndrome had Tinel's sign and positive Phalen's test respectively. Phalen found a positive Tinel's sign in 73% of hands of patients with CTS <sup>(8)</sup>. Stewart et al. and Gelmers *et al.* studies found Tinel's sign was seen in approximately 45% of their patients <sup>(9,10)</sup>.

**Table 2. Correlation of CTS severity with provocative tests of CTS**

CTS severity	+ ve Both signs	+ ve Phalen's sign	+ve Tinel's sign
Mild	25/63 (40%)	12/37 (32%)	14/33 (42.3%)
Moderate	26/63 (41%)	15/37 (41%)	13/33 (39.4%)
Severe	12/63 (19%)	10/37 (27%)	6/33 (18.2%)
Total	63/63	37/37	33/33

P = 0.577

**Table 3. Correlation of provocative tests with the CTS severity**

Provocative Test	Mild	Moderate	Severe	Total
Tinel's Sign	25/51 (49%)	26/54 (48%)	12/28 (43%)	63
Phalen's sign only	12/51 (23.5%)	15/54 (28%)	10/28 (36%)	37
Both signs positive	14/51 (27.5%)	13/54 (24%)	6/28 (29%)	33
Total	51/133 (38%)	54/133 (41%)	28/133 (21%)	133

P = 0.949

The results of phalen's sign in the present study was 75%; which is in approximate to the results of numerous studies of Phalen's maneuver in the hands of patients with suspected carpal tunnel syndrome which varied from 10% to 88%, with an average of 62% <sup>(11,12)</sup>. The present study showed 38% of CTS was mild, 41% moderate and in 21% it was severe. This is different from Yazdchi *et al.* study who's percentage of moderate and severe severity groups were 53.8% and 13.5% respectively.

The higher rate of severe group and the lower rate of moderate severity group in the present study was related to poor awareness of the

disease and late seeking of medical consultation until reaching severe pain in Iraqi patients <sup>(13)</sup>.

The present study results showed no correlation between presence of provocative signs whether phalen's sign or tinel's sign with steps of severity according to modified Padua scale of CTS severity; this results was not agreeing the conclusions of Italian CTS study group and Bland study whom demonstrated a good correlation between the clinical and electrophysiological staging of the CTS <sup>(14,2)</sup>.

Also this result is not agreeing Ahn *et al.* study who found that Provocative tests have little merit as diagnostic tools in "severe" and "mild"