Implementation of Ottawa Ankle Rules to exclude fractures of the ankle and mid-foot: Is it possible to reduce the rate of unnecessary radiographs?

Summary

Ankle and mid-foot injuries are very common at emergency departments worldwide. Patients with ankle injury constitute approximately 5% of all patients who visit emergency departments, although fewer than 15% of them will have clinically significant fractures. Despite that, most of these patients will undergo an x-ray. Ottawa Ankle Rules were developed in Canada (1992) as clinical guidelines for the use of radiography in these cases.

Objective- To examine these rules’ implementation (effectively and safely) in an Israeli emergency department and to assess the ability to reduce the amount of unnecessary radiographs without missing any fracture.

Materials and methods- 92 consecutive patients with ankle injuries who arrived to the emergency department were divided in two groups. Study group included 32 patients who arrived during the morning shift and were examined by an internal medicine specialist (Head of the emergency department) according to the Ottawa Ankle Rules. Patients discharged without an x-ray were followed afterwards in the orthopedic clinic or contacted by telephone (if they did not arrive to the clinic). The control group included 60 patients who were examined during the evening and night shifts by orthopedic residents unaware of the study. The mean age in the study and control group was similar (24 and 26, respectively) and male: female ratio was the same in both groups-4:1.
There was good acceptance of the study among patients of the study group. Two of them were excluded from the study because they insisted on having a radiography. Follow-up was done on 30 patients.

**Results**- 9 patients (30%, 95% confidence interval 15.7%-47.8%) in the study group underwent an x-ray of the ankle/mid-foot as opposed to 55 patients (92%, 82.5%-96.8%) in the control group (p<0.001). There was one fracture diagnosed in each group (3%, 0.167%-15.3% and 1.5%, 0.08%-7.9%, respectively). In the study group, no fractures were found later on in patients who were discharged without an x-ray. The mean waiting time in the emergency department was 58 minutes (Standard deviation 34.5) in the study group, as opposed to 98 minutes (standard deviation 56.05) in the control group (p<0.002). It would make it possible to save 151,200NIS at least a year at Mount Scopus ER, or a few millions a year at the national level.

**In conclusion**- The Ottawa Ankle Rules are a simple, safe and effective tool for clinical assessment of trauma of the ankle and mid-foot. They can be effectively and safely used by professionals not trained in orthopedics/trauma. Their use produces a simple yes/no decision as to whether to refer the patient to an x-ray of the ankle or foot. They enable saving radiation, money and waiting time without jeopardizing the treatment and can be efficiently used also in a small Israeli emergency department.


**Bibliography**


11. Picano E: Informed consent and communication of risk from radiological and nuclear medicine examinations: how to escape from a communication inferno. *BMJ* 2004;329;849-851


