Teaching dogs new tricks

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Commentary: Teaching dogs new tricks
T J Cole

“You can’t teach an old dog new tricks”
Dorothy Parker

Dogs are widely recognised as smelling smells that humans miss. Yet the idea of turning this canine skill to clinical diagnosis is novel. The study by Willis et al takes a first cautious step in testing such an idea by training dogs to detect bladder cancer from urine samples and then seeing if their detection rate when tested blind is better than expected by chance.¹

The design of the trial was simple and elegant. Six dogs were trained to recognise urine samples from patients with bladder cancer compared with diseased and healthy sex matched controls. Each dog was then offered a set of seven urine samples, from a person with cancer and six controls, and they identified the sample they considered to be different by lying next to it. This process was repeated eight times, so each dog effectively rolled a seven sided die nine times and by chance ought to have been successful one seventh of the time (14%). In practice the success rate was almost three times higher, to have been successful one seventh of the time (14%).

The study was carefully designed to include several features to minimise bias, and it is hard to fault the study in this respect. On balance the results are unambiguous—dogs can be trained to recognise and flag an unusual smell in the urine of patients with bladder cancer. This gives the lie to Dorothy Parker’s epigram.

Some intriguing findings for dog lovers are in the detail. The dogs were deliberately chosen to cover a range of breeds and ages and they had no particular skills in scent discrimination. The papillon performed almost as well as the three cocker spaniels, while the mongrel did worst. The two dogs trained with dried urine samples fared less well (four successes out of 18) than the others who were trained with intact samples (18 out of 36).

Looking at the results by patient again showed some striking differences. Patient 1 was correctly identified by all six dogs, whereas patients 3 and 9 were consistently missed. This may be a fatigue effect, as the results were worse in later tests (exact P for trend = 0.0006), or it may simply indicate that the strength of the urine signal varies from one patient to another.

The most intriguing finding was the control patient seen during the training phase, whose urine sample was consistently identified by the dogs as a case. Despite the fact that the patient had negative cystoscopy and ultrasonography results, the consultant was sufficiently impressed by the dogs’ performance to test the patient again and found a kidney carcinoma.

Competing interest: TJC owns a chocolate labrador.


Renal transplantation: a paradox

It is barely 2.30 in the morning when the telephone rings: “Nephrologist on call?”

Though half asleep, I recognise the voice of the coordinator of Etablissement Français de Greffe (French National Institute of Transplantation), and my hand automatically reaches for the pen and paper by the bed. She gets right down to business: “Male, mid-20s, no medical history, group A positive, cause of death—road traffic crash, right kidney.” Fortunately, my pen is able to keep up with this stream of words, even though my brain is not fully awake yet. She continues without taking a break: “CMV negative, EBV positive, Hep C negative…”

It’s only after I put down the receiver that it dawns on me: I don’t hesitate to contact the on-call nephrologist there: this is something I have been calling for, looking back—I have not yet waited. The kidney’s here.” My mouth has a bitter taste, and I wonder whether it’s the coffee I drank or my own dark thoughts. Getting up from the chair, I try to push back these conflicting feelings once more and concentrate on the task ahead.

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