Before The Headlines

COMMENTARY

Title, Date of Publication & Journal
Population-Based Case-Control Study of Recreational Drug Use and Testis Cancer Risk Confirms an Association Between Marijuana Use and Nonseminoma Risk, 10 Sep 2012, Cancer

Claim supported by evidence?

- This is the third epidemiologic study to suggest a relationship between marijuana use and a subtype of testicular cancer.
- The effect seems to be inconsistent. If the relationship were true, more marijuana use should be associated with more cancer. The paper saw the opposite: occasional (and short-term) users had a larger increase in risk than frequent (and long-term) users, respectively.
- The observed doubling in risk for a condition with peak annual incidence rates of <0.01%** is a small increase. More than 10,000 men would need to start using marijuana in order to see one additional nonseminatous testicular germ cell tumour (NTGCT) next year.

Summary and Study Conclusions

- This is a well-designed and conducted case-control study assessing the relationship between marijuana use and testicular cancer.
- The study found that users of marijuana had a 2-fold higher risk of NTGCT.
- Occasional (and short-term) users had a larger increase in risk than frequent (and long-term) users respectively, which the authors agree is surprising.
- Cocaine use appeared to have the same size effect as marijuana use - but in the opposite direction - it was protective. (This is the first study to observe the cocaine effect.)

Strengths/Limitations

Strengths

- The study design is the right way to look for causes of rare diseases.
- The identification of healthy volunteers was thorough and well-documented.
- This is the third epidemiologic study to show a relationship between marijuana and NTGCT.
- The inverse association with cocaine use suggests that marijuana use was not confounded by unmeasured lifestyle factors [as cocaine use should be a surrogate for the same things].
- The study investigated confounders thoroughly: age, race, sex, cryptorchidism [an established risk factor], education, religiosity, family history, smoking, recreational drug use.

Limitations

- The authors point out there is no accepted biological mechanism for this finding.
- The relative increase, a doubling, does not by itself suggest causation.
- The inverse relationship between dose (frequency/duration) and risk is not consistent with previous findings.
- Retrospective assessment of drug use is subject to recall bias. Inverse causation cannot be
ruled out: individuals with TGCT could start using more marijuana and therefore recall prior drug use differently.

- This is the first observation of a relationship with cocaine use. That needs to be replicated before it can be considered real.

**Glossary**

- A case-control study selects people with cancer, looks at similar (same age, race, sex) healthy individuals and examines which group has more marijuana use.

**Any specific expertise relevant to studied paper (beyond statistical)?**

No.

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* ‘Population-Based Case-Control Study of Recreational Drug Use and Testis Cancer Risk Confirms an Association Between Marijuana Use and Nonseminoma Risk’ by John Charles A. Lacson et al. will be published in Cancer at 05:01 UK time on Monday 10 September, which is also when the embargo will lift.

** this number is calculated as follows:

- The annual incidence rate of testicular cancer peaks at <18/100,000 in 25-34 y.o. men.
- NTCGT accounts for less than half of these cancers: <10/100,000 (or 0.01%).
- Therefore a doubling in this incidence would take the annual risk from 1/10,000 to 2/10,000.
- That is one extra case per 10,000 marijuana users (10,000 non-users see one case vs 10,000 users who see two cases).