ENDGAMES

We welcome contributions that would help doctors with postgraduate examinations. We also welcome submissions relevant to primary care. ▶ See thebmj.com/endgames for details

STATISTICAL QUESTION

One way analysis of variance: post hoc testing

Researchers compared pregnancy outcomes between women who stopped smoking in early pregnancy and those who either did not smoke or continued to smoke in pregnancy. A prospective cohort study was performed. Participants were 2504 healthy nulliparous women with singleton pregnancies. The primary outcomes were spontaneous preterm birth and small for gestational age infants (birth weight <10th customised centile).

The participants were grouped by smoking status at 15 weeks' gestation. Of the women recruited, 80% (n=1992) were non-smokers, 10% (n=261) had stopped smoking, and 10% (n=251) were current smokers. The women's characteristics at 15 weeks' gestation were compared between the three smoking status groups to establish differences that might have influenced the primary outcomes. A significant difference was reported between the smoking status groups in mean age at 15 weeks' gestation (non-smokers 29.7 years (standard deviation 5.1), those who had stopped smoking 25.2 (5.9), current smokers 23.1 (5.5); one way analysis of variance P<0.001). Tukey's post hoc test for pairwise comparisons showed that a significant difference (P<0.05) existed between each pair of groups—that is, between non-smokers and current smokers, non-smokers and stopped smokers, as well as current smokers and stopped smokers.
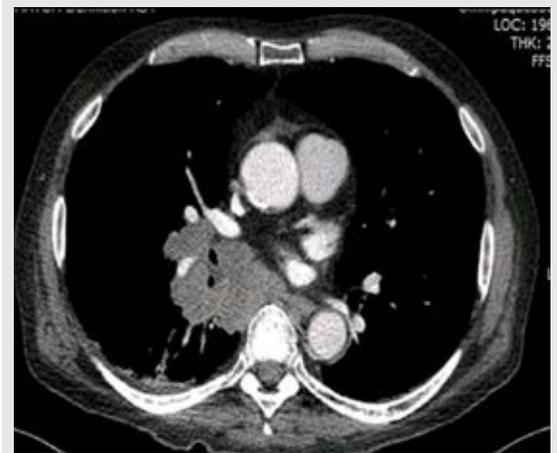
It was reported that for the group of women who stopped smoking before 15 weeks' gestation, rates of spontaneous preterm birth and small for gestational age infants did not differ significantly from those in non-smokers. The rates of spontaneous preterm birth and small for gestational age infants for the current smokers group were significantly higher than for the group that stopped smoking before 15 weeks' gestation. It was concluded that the severe adverse effects of smoking might be reversible if smoking is stopped early in pregnancy.

Which of the following statements, if any, are true?

a) The alternative hypothesis for the one way analysis of variance involved pairwise comparisons between the smoking status groups in mean age

b) The type I error rate for the one way analysis of variance in mean age at 15 weeks' gestation was 0.05 (5%)

c) The aim of Tukey's post hoc test for pairwise comparisons was to maintain the type I error rate at no more than 0.05 (5%)

Submitted by Philip Sedgwick

Cite this as: *BMJ* 2014;349:g7067

ANATOMY QUIZ

Magnetic resonance arteriography of the neck: time of flight sequence

Identify the structures labelled A, B, C, D, E, and F in this magnetic resonance arteriogram of the neck.

Submitted by Sawsan Taif

Cite this as: *BMJ* 2014;349:g5294

PICTURE QUIZ

A collapse with hypertension and hypokalaemia

A 60 year old white man was admitted from the emergency department after an unwitnessed collapse and generalised weakness and malaise. He had no medical history of note and was taking no drugs. On clinical assessment he had hypertension, which had not previously been documented, with a blood pressure of 187/91 mm Hg. Blood tests showed severe hypokalaemia (2.1 mmol/L (reference range 3.6-5.0), having been normal (4.7) nine months earlier) and metabolic alkalosis (bicarbonate 38 mmol/L, 22-30). Random blood glucose was 6.0 mmol/L (3.5-7.8).

On the post take ward round, he was noted to have clubbing of the nails and a tanned appearance. A 60 pack year smoking history was elicited. Further biochemical tests were requested and, because his chest radiograph was abnormal, chest computed tomography was performed (figure).

1. What does this axial computed tomogram through the chest show?
2. What is the unifying diagnosis?
3. What is the underlying pathophysiology?
4. What tests would you use to confirm the diagnosis?
5. How would you manage this condition?

Submitted by Hannah Pintilie, William Petchey, Ketan Dhatariya, and Mahzuz Karim

Patient consent obtained.

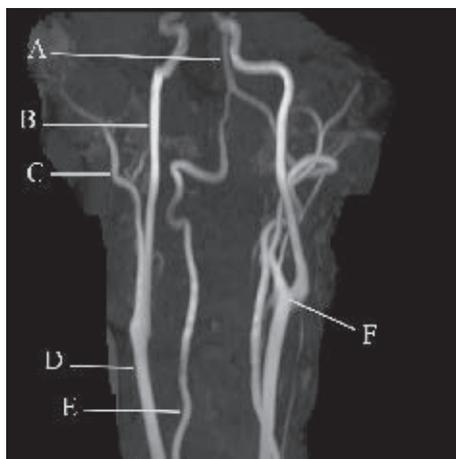Cite this as: *BMJ* 2014;349:g6582

We welcome all contributions to the Endgames section. Longer versions are on the Education channel on thebmj.com.

Please submit via thebmj.com or contact Amy Davis at adavis@bmj.com