

EXHIBIT BJ

24/04/2019

To:

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NSW Crown Solicitor's Office | 60-70 Elizabeth Street, Sydney NSW 2000

Inquiry into the Convictions of Kathleen Megan Folbigg

Report of the exercise tolerance test (ETT) on Kathleen Folbigg obtained 18th April.

Files reviewed:

Two JPGs were sent to me from Dr Hari Raju (ETT1 and ETTT2), ETT1 is a good quality reproduction, with calibration and ECG timing squares are easily visible. ETT2 contains some selected printouts from the ETT, but the quality is a poor reproduction, adequate for rhythm interpretation but not for QT measurements. An ECG set of similar poor quality is sent of the standing test (postural ECG). At the end of the exercise test the ECG leads are repositioned to test for Brugada syndrome.

General notes:

I note the name "Megan Folbigg" on two of the reports, but have checked with Dr Raju who has confirmed all of these tests are indeed from Kathleen Folbigg.

Interpretation of the ETT is made more difficult by considerable artefact, unfortunately common during exercise tests. Some of these artefacts resemble ventricular arrhythmia and are discussed below.

The exercise test

The unsigned conclusions (presumably from a technician) state:

"The patient was tested using Bruce (protocol) for a duration of 12:30 (minutes). A maximum heart rate of 173 was obtained at 12:40 with a maximum systolic blood pressure of 200/80 at 08:00 and a maximum diastolic blood pressure of 110/80 at 10:00. A maximum ST depression of -1.2 mm in II occurred at 11:30. A maximum ST elevation of +1.0mm in V2 occurred at 13:20."

General comments

I note that the comment on blood pressures doesn't make sense and assume the words "systolic" and "diastolic" should be ignored, 200/80 I assume is the systolic/diastolic pressure at 08:00 and same for 110/80 at 11:10.

Graphs show the heart rate rose steadily from 80 to 173 over 12-13 minute and settled to 115 by 18 minutes. The bars show the blood pressure recordings.

The ST level trends show minor ST depression (II,III,avF and lateral V leads) most at 11 minutes, which is minor and up-sloping and unlikely to represent ischaemia.

The resting heart rate is 64-67 beats per minute, sinus rhythm. Aside from the later mentioned isolated ventricular beats, the rhythm is stable throughout.

QT intervals

(Measured in lead 2/V5 and taking the average of 2-3 beats)

Pre-test standing QT 400 R-R 1000 QTc 400

Recovery. Note some ST depression leads to a biphasic T wave rendering the determination of the end of the T wave by the tangent method challenging- because the downslope of the t wave is short and rounded. The T wave morphology is, however, not suggestive of long QT syndrome.

1 minute QT 265 R-R 370 QTc 436

3 minutes QT 315 R-R 470 QTc 459

4 minutes QT 345 R-R 520 QTc 478

5 minutes QT 300 R-R 540 QTc 408 (the end of the T wave is more easily seen now)

Standing Test (Folbigg postural ECG)

This test is performed because it can manifest concealed long QT syndrome.

The copy is a poor photocopy such that the squares for calibration are difficult to see. However the measurements made are comfortably within normal. There aren't clear indicators of standing time etc, but I have taken a measurement at baseline (whilst supine) and then at the fastest heart rate which looks like the greatest QT stretch, in fact it doesn't seem to stretch, again giving evidence against long QT syndrome.

Baseline QT 380ms R-R 1030 QTc 370ms

Standing QT 380ms R-R 740 QTc 440ms

Ventricular ectopy/ artefactual ECG deflections

There is no ventricular ectopy at rest. But there are some likely single ventricular ectopic beats (VEs), and a series of artefacts which resemble a ventricular couplet and triplet at heart rates over 150 beats per minute only.

Single VE at 09:23:15 (HR150) (15 seconds into stage 4) , 09:23, (23 seconds into stage 4), a **single VE**, no resetting of sinus rhythm and 09:23:41 (HR162) , broad , superior axis ("VE type 1"), without an effect on the sinus rate and no compensatory pause.

ETT 2 (9:24:08 am) 10:31 , 1:31 into stage 4, artefact resembling **VE triplet**, 360ms,260ms,240ms, followed 3.7 seconds later by an artefact resembling a **VE couplet** (240ms/280ms). The apparent triplet is negative in lead 1 unlike earlier single broad VEs.

11:22 (09:24:59)? **single VE**, different appearance to other ventricular ectopic (this has an apparent inferior axis) .

page 21, 10:04, considerable artefact, ? **single VE**, very similar to previous one with a superior axis, mild ST depression become more noticeable- 1-1.5 mm at 11:30-end of stage 4 and start stage 5

Are the VEs/couplet/triplet genuine or artefact?

The ECGs tracings have multiple artefacts, with random quite large deflections. Clearest examples are at 8:22 (09:21:59) where there are many large deflections which have no effect on the overall rhythm and are obviously artefact. This rhythm strip is clearly unreliable in the detection of aberrant beats. On ETT2 at 10:04 into exercise (9:23:41 am) there are many deflections of similar size to the QRS complexes in lead 1 2 and 3. This occurs just before the possible VE, which may itself be artefactual.

At 10:35 (9:24:11 am) there as what appears on first inspection to be a three beat ventricular run. But close examination on lead I reveals a QRS at the immediate end of the third broad deflection which resembles the subsequent sinus beat QRS complex, this is also seen in lead III by the sharp component of the sinus generated QRS complex showing through the artefactual larger deflections. I consider therefore this apparent triplet is in fact a movement artefact.

Similarly, the apparent couplet a few seconds later is preceded by a change in the QRS, most clear in V1, and the QRS in sinus is not offset at all. I consider this apparent couplet is artefact as well.

Placement of the chest ("V") leads to look for any features of Brugada syndrome

Dr Raju described to me by email that at the end of the exercise test (after 6 minutes), the chest leads were repositioned into a standard upper chest position, known to be a more sensitive for the detection of the Brugada ECG signature.

"V1 + V2 = 4th intercostal, V3 + V4 = 3rd intercostal, V5 + V6 = 2nd intercostal"

I have reviewed these ECG recordings and find no Brugada sign.

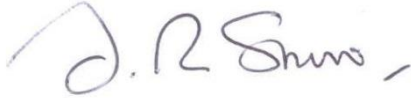
Summary

The exercise test shows a good heart rate and blood pressure response and average exercise tolerance. The test is within normal for age.

The QT behaviour on the standing tests is within normal, and also in recovery of the exercise test though defining the end of the T wave is challenging due to the T wave distortion from the mild ST segment changes, which tends to prolong the T wave. The appearances of the T waves are not suggestive of long QT syndrome.

The apparent large deflections are mostly if not all artefact, and I discount, in particular, the apparent VE triple and couplet as evident artefact, most likely from leads becoming partly detached. Most of the apparent single VEs also appear at a time when there are many other artefacts and with the exception of the first ventricular ectopic type, which appears twice on the traces, I consider that these broad deflections can be discounted as artefact.

Therefore I find no evidence of long QT syndrome, and no evidence of significant ventricular arrhythmia. There are a small number of single ventricular ectopic beats, common on exercise tests in people of this age and which are not likely to be of clinical significance. The ECG modified to detect Brugada syndrome was negative.

A handwritten signature in black ink, appearing to read 'J.R. Skinner'.

Jonathan R Skinner

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