QUEENSLAND COURTS

CORONERS COURT OF QUEENSLAND

FINDINGS OF INVESTIGATION

CITATION:	**Non-inquest findings into the death of Mr DAC**
TITLE OF COURT:	Coroners Court
JURISDICTION:	SOUTHPORT
DATE:	3 September 2019
FILE NO(s):	2017/2740
FINDINGS OF:	James McDougall, Coroner
CATCHWORDS:	CORONERS: angiogram, stent, pseudo-aneurysm, infection, treatment and care

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Background

Mr DAC was 51 years old. He lived with his wife and children at Banora Point, New South Wales. Mr DAC had a past medical history including obesity, stage 4 renal cell carcinoma (RCC; advanced kidney cancer) with nephrectomy (kidney removal) in July 2009, metastases (spread of tumour) to the pleura (lining of the chest cavity) and ribs in December 2013, intracranial haemorrhage (bleeding within the skull) in October 2014 leading to resection of brain metastases in January 2015 and presumed pancreatic metastases on CT scan; deep vein thromboses (DVT; clot in vein) with pulmonary embolus (PE; dislodged clot travelled to the lung) in September 2015; Sweet's syndrome (acute febrile neutrophilic dermatosis; fever, elevated white (immune) cells in the blood with tender, red skin lesions) secondary to chemotherapy medication; and, sarcoidosis (formation of nodules containing collections of inflammatory cells).

In April and May 2017, Mr DAC had a number of presentations to The Tweed Hospital (TTH) for chest pain. He was regularly reviewed and transferred to Gold Coast University Hospital (GCUH) for treatment. On 10 May 2017, Mr DAC underwent an angiogram which revealed stenosis of the left anterior descending coronary artery. A stent was inserted. Mr DAC was discharged, however he represented on 16 May 2017 and was subsequently diagnosed with a pseudo-aneurysm (a false aneurysm that occurs when the wall of a blood vessel is injured leading to leakage of blood that is contained in the surrounding tissue) arising from the distal common femoral artery. Mr DAC underwent aggressive treatment for infection which included eight surgical procedures with prolonged antibiotics in the absence of any identifiable infective organism however he died on 26 June 2017.

Autopsy report

A partial internal (abdomen and chest) and external post-mortem examination was conducted by Associate Professor Alex Olumbe on 29 June 2017.

Associate Professor Olumbe noted that Mr DAC had co-morbidities including metastatic renal cell carcinoma which had been treated with chemotherapy and a right nephrectomy and that his prognosis for survival was one year.

Associate Professor Olumbe says that Mr DAC was more prone to sepsis due to the cytoxic therapy for his renal cell carcinoma. He also says that Mr DAC's co-morbidities of sarcoidosis (collection of inflammatory cells known as granulomas in the lungs/lymph nodes) and ischaemic heart disease would have contributed to his death. Unfortunately Associate Professor Olumbe does not say how they would have contributed to Mr DAC's death, but presumably made him more susceptible to the development of sepsis.

Associate Professor Olumbe determined Mr DAC's cause of death was sepsis due to or as a consequence of right lower limb necrotising fasciitis (infection caused by bacteria that rapidly spreads into the subcutaneous tissue and fascia) due to or as a consequence of right inguinal femoral artery pseudo-aneurysm, coronary atherosclerosis (stent insertion), and ischaemic heart disease.

Following Mr DAC's death the Health Service conducted a review.

Human Error and Patient Safety (HEAPS) Incident Analysis Report

The HEAPS team identified Mr DAC's co-morbid conditions as:

- stage IV renal cell carcinoma (RCC) and malignancy associated immune suppression, diagnosed in 2009 and previously treated with nephrectomy and targeted anti-cancer

therapy since 2014;
- bone metastasis to the right rib requiring radiation treatment;
- brain metastasis diagnosed in 2015 and treated with operative resection;
- newly identified pancreatic lesion which was progressing suggestive of further metastatic spread;
- obesity; and
- thromboembolisms – deep vein thrombus and pulmonary embolisms.

The HEAPS team identified that Mr DAC had survived past the medial life expectancy for RCC which has a 2.4 year life expectancy rate.

The HEAPS team recorded the following with respect to Mr DAC's medications:

- he was receiving cytotoxic agents for his RCC. At the time of his presentation in May 2017, Mr DAC was receiving Pazopanib, a second line therapy which is a potent and selective multi-targeted receptor tyrosine kinase inhibitor that blocks tumour growth and inhibits angiogenesis. The HEAPS team considered that continuing Mr DAC's Pazopanib until 20 May 2017 would have 'significantly contributed to the outcome' as it would have impaired his wound healing and reduced his immune response;
- the long term steroid treatment Mr DAC had received would have contributed to his impaired wound healing and immune response; and
- the long term anti-coagulants for treatment of Mr DAC's pre-existing thromboembolism and anti-platelet agents for his coronary artery disease was contributory to Mr DAC developing a haematoma and/or pseudo-aneurysm.

The HEAPS team considered that the:

- decision to perform the angiogram was an appropriate and suitable intervention;
- the puncture site selected for the angiogram was correct and appropriate and did not contribute to the development of the pseudo-aneurysm;
- when Mr DAC was admitted to TTH for post-operative care there was a potential missed opportunity to identify the pseudo-aneurysm however this would not have altered the eventual outcome; and
- emergency presentation and subsequent operation to manage the pseudo-aneurysm did not provide an opportunity for the vascular surgery team to have considered the appropriateness of surgical intervention the subsequent sequelae as would an elective procedure (I consider this to be somewhat misleading as Mr DAC was at GCUH for approximately 24 hours prior to his *'emergency'* surgery).

The HEAPS team reported that a pseudo-aneurysm was a common and usually simple complication of an angiogram, occurring in between 5 – 8% of patients.

The HEAPS team identified that in retrospect the cardiology team should have been advised that Mr DAC required re-admission for the pseudo-aneurysm resulting from the angiogram however this would not have resulted in any different management Mr DAC received as the vascular team was the appropriate specialty to treat the pseudo-aneurysm.

The HEAPS team say that the Gold Coast Hospital and Health Service received a complaint letter from the next of kin (NOK) with respect to communication between Mr DAC's treating teams. The clinicians involved experienced significant levels of distress as a result of the Hospital and Health Service's (HHS) complaint management service as they were not informed about the complaint for six weeks and did not have the opportunity to respond to the NOK.

The HEAPS team ultimately determined that Mr DAC's death was an unfortunate outcome as a consequence of his metastatic malignant disease, drug therapy and other comorbid conditions. While the outcome could potentially be interpreted as 'not reasonably expected' the HEAPS teams considered that review of the context of Mr DAC's significant and complex comorbidities and associated treatments provided explanation for the outcome.

Clinical Forensic Medicine Unit (CFMU) review

Forensic Specialist, Dr Ian Home completed a review of the medical records and autopsy report and provided a report dated 23 August 2018.

Dr Home was not critical of the care provided to Mr DAC by TTH. He considered Mr DAC was regularly assessed and promptly transferred to GCUH for treatment.

Dr Home noted that infection and pseudo-aneurysm at the femoral artery access site are recognised complications of percutaneous interventions. Dr Home considered that a number of Mr DAC's comorbidities contributed to Mr DAC's failure to recover from an infected pseudo-aneurysm. Malignancy, long term use of steroids and anti-cancer drugs, including the selective tumour growth inhibitor Pazopanib all contributed to an increased risk of infection and impaired his wound healing.

Dr Home considered that the only opportunity to have changed the outcome was to have prevented the formation of pseudo-aneurysm following angioplasty. Dr Home says that this would not have eliminated the skin infection but it would have obviated the need for surgical intervention, at least initially. Dr Home recommended obtaining an opinion from a cardiologist about Mr DAC's management in circumstances when he had recurrent episodes of groin pain and swelling following the angiography and insertion of stent.

Report of Dr Kenneth Hossack

Dr Kenneth Hossack, Cardiologist, reviewed the medical records and provided a report dated 9 May 2019.

Dr Hossack considers that there was no clear communication between GCUH and TTH regarding the decision making regarding invasive procedure in a patient receiving palliative care for metastatic disease. He says that he could *'find no evidence of a survival estimate when Mr DAC presented in April 2017. This lack of communication made the decision making regarding invasive angiography difficult'* i.e., there should have been a discussion with respect to Mr DAC's long term prognosis and how the presence of a non ST elevation myocardial infarction would impact on his survival.

Admission to GCUH on 28 April 2017

Dr Hossack considers that on 28 April 2017 Mr DAC *'unequivocally'* met the criteria for a non ST elevation myocardial infarction as he had chest pain symptoms not typical of angina, new ECG changes and an abnormal rise in his troponin. The echocardiogram performed indicated a wall motion abnormality. Dr Hossack was critical that he was treated with pain medication and prescribed aspirin. Dr Hossack says that Mr DAC should have been treated with a beta blocker and a statin drug.

Admission to GCUH on 10 May 2017

Dr Hossack is critical of Dr R on the basis that he did not undertake any pre-procedure evaluation which was necessary given the complex nature of Mr DAC's co-morbidities.

Dr Hossack says there is no evidence in the medical records that he discussed the situation with Mr DAC and his family nor the medical oncologist at TTH. The option to treat Mr DAC with pharmacological therapy was not explored. Unfortunately Dr Hossack does not comment on whether Mr DAC should have been treated with pharmacological therapy and if so, whether this would have prevented Mr DAC's subsequent demise.

Dr Hossack considered that the performance of coronary angiography/angioplasty had increased risk of complication due to the following factors:

- increased risk of bleeding due to Rivaroxaban;
- difficulty obtaining control of the puncture site because of Mr DAC's obesity (BMI > 36); and
- delayed healing due to use of Dexamethasone and Pazopanib.

Dr Hossack says that in his opinion *'had Dr R properly assessed Mr DAC prior to angiography he would have chosen a radial approach which allows a much greater chance of achieving haemostasis following the procedure'.*

Dr Hossack considered that after the procedure there was difficulty in obtaining haemostasis at the femoral artery puncture site. Dr Hossack considers that the description of events following removal of the femoral sheath suggests that:

- there was significant bleeding from the femoral artery following removal of the sheath;
- there were at least two significant episodes of bleeding:
  - the first occurred following removal of the C-clamp;
  - the second occurred at 0300 hours when there was further pain and evidence of tenderness in the groin. A Femostop device was applied; and
- the clinical notes suggest that there was no palpable haematoma. Dr Hossack noted that Mr DAC was on three drugs that affect coagulation namely Aspirin, Clopidogrel and Rivaroxaban.

Dr Hossack considered the post-operative management of bleeding from the groin was *'negligent and below the standard of care'*. There was no evidence Dr R reviewed Mr DAC. He considered a competent cardiologist, with the knowledge Mr DAC was on dual anti-platelet therapy and Rivaroxaban and two episodes of bleeding into the groin following removal of the sheath, would have conducted an ultrasound of the femoral artery (on 11 May 2017) to exclude the presence of a pseudo-aneurysm and confirm satisfactory closure of the femoral artery. Dr Hossack considered that this *'failure was the single most important factor that resulted in the death of Mr DAC'*. He later says that this was the *'major cause of the sequence of events resulting in Mr DAC's demise'*.

Dr Hossack says that if the pseudo-aneurysm had been diagnosed on 11 May 2017 it could have been treated with an injection of Thrombin which *'would almost certainly have resulted in obliteration of the aneurysm'*.

Dr Hossack considered that once Mr DAC presented with the infected pseudo-aneurysm along with the presence of metastatic disease, steroid dependency and recent use of tyrosine kinase inhibitor *'made a successful outcome unlikely'*.

Conclusion

The autopsy confirmed, and I find, that Mr DAC died on 26 June 2017 at Gold Coast University Hospital. The cause of death was:

1(a). Sepsis, due to or as a consequence of
1(b). Right lower limb necrotising fasciitis, due to, or as a consequence of
1(c). Right inguinal femoral artery pseudo-aneurysm (bypass surgery), coronary atherosclerosis (angioplasty-stent insertion).
2. Ischaemic heart disease, Sarcoidosis.

Having regard to the investigations already conducted the investigation would not be advanced by proceeding to inquest. It would not be in the public interest to proceed to inquest.

I close the investigations.

James McDougall
Coroner
CORONERS COURT OF QUEENSLAND
SOUTHERN REGION
3 September 2019