Usefulness of Tc-99m Pertechnetate SPECT/CT in the Diagnosis of Testicular Infarction After Inguinal Herniorrhaphy

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Abstract A 77-year-old male underwent open repair for a right indirect inguinal hernia and complained of right scrotal pain on the third postoperative day. Color Doppler imaging revealed decreased blood flow with heterogeneous hypoechogenicity in the right testis. A Tc-99m pertechnetate testicular scan showed diffuse hyperemia and increased uptake in the right scrotum. Additional SPECT/CT revealed a photon defect in the right testicle with increased uptake in the peri-testicular area. A subsequent operation revealed a large hematoma in the right spermatic cord and consequent right testicular infarction, and right orchiectomy was performed.

Keywords SPECT/CT · Tc-99m pertechnetate · Testicular infarction · Testicular scan

The patient's urologists decided on a diagnostic and therapeutic operation. During surgery, the right spermatic cord was seen to be

compressed by a large hematoma with fluid and showed severe inflammatory changes. The right testicle and epididymis were a dark-brown to black color, suggesting hemorrhagic and necrotic changes. Right orchiectomy was done and histological examination revealed a necrotic testis. The blood vessels were congested and showed evidence of thrombus (Figs. 1 and 2).

Global and segmental testicular infarctions are recognized consequences of torsion of the spermatic cord, incarcerated hernia, infection, trauma, vasculitis, sickle cell disease, hypercoagulable states, and inguinal hernia repair [1–4]. Although ultrasound is the imaging modality of choice for the evaluation of acute scrotal pain, testicular scintigraphy has proven to be reliable and accurate in reflecting acute testicular ischemia as well as chronic ischemia and infarction [5–7]. Tc-99m pertechnetate testicular SPECT/CT study generally would not be performed in emergency situations. However, SPECT/CT could provide more detailed information about the state of blood flow, as seen in this case. To the best of our knowledge, this is the first documented case of SPECT/CT

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Fig. 1 A 77-year-old male underwent open repair for a right indirect inguinal hernia with prosthetic mesh. On the third postoperative day, the patient developed right scrotal swelling and pain. On physical examination, the right scrotum was enlarged and the right lower inguinal area was swollen with bluish discoloration. A testicular

ultrasonography demonstrated both hydroceles. Color Doppler imaging revealed decreased blood flow with heterogeneous hypoechogenicity in the right testis (**a**). Normal blood flow was detected in the left testis (**b**). However, torsion knot was not found in the right spermatic cord

Fig. 2 The patient was referred for a Tc-99m pertechnetate testicular scan. The flow phase showed mild and diffuse hyperemia in the right scrotum (**a**, arrow). A blood pool image at 5 min after injection (**b**) and a pinhole image at 10 min (**c**) also showed increased activity in right testis (arrows); this finding was not consistent with those of ultrasonography. Additional SPECT/CT was performed for differential diagnosis. Coronal

and axial images of SPECT/CT showed a photon defect in the right testicle (arrow heads) with increased curvilinear tracer uptake in the peri-testicular area (white arrows) (**d**, **e**). These findings were consistent with right testicular infarction with peri-testicular hyperemia due to reactive changes such as inflammation

findings in a patient with testicular infarction. This case highlights the usefulness of SPECT/CT to diagnose testicular infarction in a patient with uncertain findings on the testicular scans.

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Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no conflict of interest.

Informed Consent Informed consent was obtained from all individual participants included in the study.

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