Aortic mycotic aneurysm due to *Salmonella dublin*

Sir,

Mycotic aneurysms due to salmonella infections are uncommon but not rare.¹ There is some evidence suggesting their increasing role in the pathogenesis of this lesion.² Arterial trauma, concurrent sepsis and depressed host immunity are said to be the cardinal ‘risk factors’ in the development of these lesions.³ We would like to report a case of aortic mycotic aneurysm and salmonellosis.

A 79-year-old German male patient, presented to the out-patient clinic with a high fever and backache. Upon admission to the medical ward, samples for blood cultures were taken together with the other routinely performed laboratory investigations.

There was severe anaemia, thrombocytopenia and mild leukocytosis, but the other laboratory investigations were within normal limits. However, the blood cultures revealed *Salmonella dublin* (S. dublin) several times, though interestingly his stools remained negative throughout his hospitalization. Ultrasonography of the abdomen and great abdominal vessels showed an aneurysm of the abdominal aorta extending to the left iliac artery. Moreover, CT scanning on the same day also detected a concealed perforation of the left iliac artery plus an enlargement of paravertebral lymph nodes. These findings were confirmed intraoperatively. Biopsies of the lymph nodes led later to the histological diagnosis of non-Hodgkin’s lymphoma with a low grade of malignancy.

Conventional surgical intervention resulted in extra-anatomic bypass grafting (aorto-renal) of the aneurysm. At the same time samples of the purulent material from the ruptured aneurysm was taken for culture. These cultures revealed exclusively *S. dublin*. According to the antibiotic sensitivity testing, antibiotic treatment was initiated intravenously with ciprofloxacin (0.4 g/day) and ampicillin (4 g/day). After 10 days, treatment was continued orally with ciprofloxacin (1 g/day) for another 3 weeks. Under this treatment *S. dublin* was cleared from the patient and the follow-up cultures (faeces, urine and wounds) remained negative. Postoperatively, the patient developed no complication and was discharged in a good condition.

Mycotic aneurysm of the great blood vessels is a grave complication of non-typhoidal salmonella infections.³ It has been reported that *Salmonella* species cause approximately 20% of all mycotic aneurysms.⁴ The fact that salmonellae are potent pathogens explains their increasing role as infecting organisms. A transient bacteremia leading to haematogenous infection in a predisposed person may be the initiating event in the development of the lesions. In our patient, cultures of the blood, of the purulent material and of the surgical wound swabs revealed *S. dublin* several times. This could be partially attributed to the depressed immunity of the patient complicated by the fact that *S. dublin* possesses frequently a capsular antigen⁵ favouring an increased phagocytic resistance which may be similar to that of *S. typhi*.

Reviewing the literature on the subject reveals that *S. dublin* has been rarely isolated from faeces but is recovered with high frequency from other sites.⁶ This supports our belief that *S. dublin* might be a zoonotic salmonella (mostly of bovine origin)⁷ which causes a systemic typhoid-like disease in humans.⁸ This emphasizes the fact that it is more virulent than other enteric serotypes.⁹

It is essential to mention that a prompt surgical intervention plus prolonged combined antibacterial treatment for 4–6 weeks is highly recommended for salmonellae aneurysms.

In conclusion, the role of non-typhoidal salmonellae in the aetiology of the mycotic aneurysms seems to be considerable. Repeated positive blood cultures in spite of the relevant chemotherapy should always raise the possibility of salmonella vascular involvement. Early surgical intervention plus chemotherapy improves the prognosis. Particular attention should be given to patients with the relevant symptoms who live in or come from areas where salmonella infections are endemic.

**References**


Testicular Blockage and Azoospermia

Sir,

Total lack of spermatozoa from seminal fluid or azoospermia has been reported to be as high as 10–20% among infertile male patients; and its prevalence in general population to be 2%. The main differential diagnosis is between testicular failure and bilateral obstruction of the excurrent ducts of the testes or ‘testicular blockage’. The latter is the most successfully treated cause of azoospermia with a success rate ranging from 30 to 70% depending on findings during spermatic cord exploration and the viability of spermatogenesis as assessed in a testicular biopsy. Four histopathologic patterns are present in testicular biopsies from azoospermic patients: (1) Germ cell aplasia (Sertoli’s cell only syndrome); (2) Spermaticocytic arrest; (3) Diffuse testicular atrophy and generalized fibrosis; and (4) Normal or adequate spermatogenesis. The first three patterns represent testicular failure and the fourth pattern indicates bilateral testicular blockage.

During the last 4 years 109 testicular biopsies from patients with primary infertility, were received at the histopathology laboratory of Asir Central Hospital in Abha. Table 1 shows the distribution pattern of various histopathologic findings with comparison between Saudi nationals, non-Saudi residents and a Western population.

<table>
<thead>
<tr>
<th>Histopathologic diagnosis</th>
<th>Asir region population</th>
<th>Non-Saudi population</th>
<th>Total</th>
<th>Western population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obstruction</td>
<td>23 (37)</td>
<td>29 (63)</td>
<td>52 (48)</td>
<td>102 (27)</td>
</tr>
<tr>
<td>Sertoli cell only</td>
<td>16 (25)</td>
<td>7 (15)</td>
<td>23 (21)</td>
<td>108 (29)</td>
</tr>
<tr>
<td>Testicular atrophy</td>
<td>14 (22)</td>
<td>4 (9)</td>
<td>18 (17)</td>
<td>67 (18)</td>
</tr>
<tr>
<td>Spermaticocytic arrest</td>
<td>10 (16)</td>
<td>6 (13)</td>
<td>16 (14)</td>
<td>98 (26)</td>
</tr>
</tbody>
</table>

TOTAL 63 (100) 46 (100) 109 (100) 375 (100)

Figures in parentheses are percentage (crude relative) frequencies.

*From Ref. 3 and 4.

The data in Table 1 indicates that testicular blockage is more frequent among Asir region population (48%) than the Western population (27%) with significant statistical values \( \chi^2 = 16.4, p < 0.001 \). Non-Saudi nationals, all from Yemen, are more frequently affected by obstruction (63%) than Saudi (37%) and Western (27%) with significant statistical values \( \chi^2 = 7.5, p < 0.01 \) and \( \chi^2 = 24.6, p < 0.001 \) respectively. The number of Saudi patients was 63 (58%) and the number of non-Saudi residents was 46 (42%). Many patients and physicians have been discouraged from pursuing the evaluation and treatment of patients with azoospermia because of reports from Western countries that the majority of azoospermic patients have untreated testicular failure. We hope to change the attitude towards this problem and to compare our findings to those from other provinces of the kingdom.

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References


Subcutaneous and Mediastinal Emphysema Following Colonoscopy

Sir,

Recently, we were involved in the management of a 72-year-old female who attended for colonoscopy as part of a regular follow-up after an anterior resection carried out for Duke’s A Carcinoma, 5 years earlier. Colonoscopy was carried out. There was no abnormality at the level of the anastomosis, however, the view at 40 cm was inadequate and more proximal examination was abandoned.

Following this procedure, the patient experienced some abdominal discomfort which was not taken seriously and the patient was allowed home to be readmitted 12 h later with severe abdominal pain, shortness of breath and facial swelling. The patient was dyspnoeic, tachypnoeic and there was massive subcutaneous emphysema involving the entire face, neck and upper thoracic region. Her abdomen was distended, tympanic, rigid and tender all over. A diagnosis of perforated viscus was made and chest X-ray showed massive pneumoperitoneum in addition to mediastinal and subcutaneous emphysema.

The patient was taken to theatre and, at laparotomy, there was anterior perforation of the descending colon 10 cm distal to the splenic flexure. This was repaired and defunctioning colostomy performed. The patient’s condition improved greatly and the massive emphysema almost disappeared within 72 h.

Perforation of the colon, after colonoscopy, occurs in 0.22–2% of cases, while associated mediastinal and subcutaneous emphysema have been rarely reported and all documented cases in the literature were due to retroperitoneal perforation. We are not aware of any reported case due to anterior colonic perforation.

In our case, we think that an initial subtotal perforation with subserosal dissection of air occurred. The air was decompressed into the retroperitoneal space and then into the mediastinal and subcutaneous tissue planes, followed by total perforation and pneumoperitoneum.

We believe it is important not to ignore minor symptoms following common procedures like barium enema, sigmoidoscopy and colonoscopy. Endoscopists must be alert to the possibility of uncommon complications.

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Head Trauma in Early Infancy—Accident or Abuse?

Sirs,

Sometimes a child reported to have accidental injury is found to have severe lesion which is incompatible with the history. The injuries may have been inflicted in such cases by one of the parents or by some other adult and the history is intended to mislead.

The awareness of professionals who once exhibited a nearly total lack of interest in child battering, was raised more than two decades ago. Child abuse can be seen as part of the greater problem of the disintegration of family life. The incidence is believed to be increasing in most developed countries. The evaluation and management of abused children presents a challenging task for paediatricians. I would like to draw the attention of colleagues to the occurrence of this condition in early infancy especially in our community where the help of maids is sought by many families.

I was consulted at a district hospital to see a child who was brought in a convulsive state. This 10-week-old boy had right-sided seizures. The parents insisted that they left their boy for 60–90 minutes in perfect health under the care of their housemaid.

Physical examination revealed increased tone and reflexes, right-sided tonic–clonic activity. An initial haemoglobin was 9.2 g/dl with normal electrolytes, coagulation and blood chemistry value and the chest X-ray was normal. The skull radiograph demonstrated a fracture of the left parietal bone with overlap. There was some recession of the left hemisphere suggesting the presence of a subdural collection. There was a metallic foreign body namely a needle entering the brain at the level of the fontanelle and penetrating deeply into the left hemisphere. The neurosurgeon removed the foreign body and evacuated the subdural haematoma. At 4 and 6 months of age, the boy was noted to have developmental delay. The housemaid denied at the beginning any foul act indicating the child might have accidentally fallen. Later on she confessed that she introduced the needle inside the child's brain and deliberately caused his falling.

In the light of the literature it is believed that the occurrence of intracranial injury in infants in the absence of a history of accidental trauma like a motor accident constitute grounds for investigating the possibility of child abuse. Certain clinical features such as complex, depressed or diastatic fractures, retinal haemorrhages, and associated findings such as metaphyseal fractures and failure to thrive make the diagnosis of abuse more likely. A routine complete skeletal survey is normally indicated in all infants under 2 years of age who have clinical evidence of physical abuse, or infants under 1-year-old who show evidence of significant neglect and deprivation. These measures are especially indicated where parents depend on untrained maids—a trend which is becoming more frequent in our society. The diagnosis of abuse is an uncomfortable one, and there is still a great reluctance on the part of physicians to entertain this possibility.

To make the correct diagnosis and take the correct actions are especially important in the first 6 months of life because the risk of a fatal outcome is high if the diagnosis is missed at this age. Physicians have two responsibilities toward abused children: detection and reporting.

References


Left Pulmonary Agenesis

Sirs,

Pulmonary agenesis is a rare congenital anomaly usually associated with other congenital malformations of the body. The incidence of pulmonary agenesis is one in 10 000–15 000.1

We report the clinical presentation and management of the case.

The patient was born to a multi-gravida mother by full-term normal vaginal delivery in our hospital with a normal Apgar score. There was no history of consanguinity. No neonatal respiratory distress was observed.

At the age of 20 days, the baby was admitted into the nursery with a history of cough and difficulty in feeding for 3 days. On examination, the child was found to have phtocephaly. Clinically, there was no other congenital anomaly and anthropometric data were within the normal ranges. Examination of the respiratory system revealed that the trachea was shifted to the left, and there was dullness to percussion the left side of the chest with the breath sounds diminished on the same side. There were crepitations and rhonchi on the right side. The rest of the physical examination was normal.

A chest X-ray showed that there was overinflation of the right lung with herniation to the left, haziness of the left chest with loss of outline of the left dome of diaphragm. The cardiac silhouette was not seen well. There were also hemivertebrae in the cervicodorsal region.

Bronchoscopy revealed no opening for the left main bronchus; the right main bronchus was normal. These findings were consistent with a diagnosis of left pulmonary agenesis.

A CT scan showed no lung tissue on the left side with herniation of the right lung with shifting of the mediastinum and heart to the left side, thus corroborating the bronchoscopic findings of agenesis of the left lung.

Ultrasonography of the abdomen showed a hypoplastic left kidney and a normal right kidney.
The child who is now 15 months old was admitted 8 times since birth for recurrent chest infection. His growth has been poor, and his weight and height are below the 10th percentile. The child is coming regularly for follow-up examination.

Unilateral agenesis of the lung may occur as a single anomaly or be associated with gastrointestinal, renal, cardiovascular or bony abnormalities. Although the condition is rare, recurrent chest infection and persistent opacity on the chest X-ray either on the left or right should arouse suspicion of unilateral pulmonary agenesis. The diagnosis has to be confirmed by bronchoscopy, bronchography or CT scan of the chest.

Parental consanguinity has been found by some workers, but in our case there was no such history. Asymptomatic cases do not require any treatment. Vigorous treatment for the chest infection with antibiotics and physiotherapy are life-saving measures for such cases. There is also a need to renew efforts for chemoprophylaxis and polyvalent vaccine.

The overall prognosis depends on two factors, firstly, the severity of the associated congenital abnormalities and secondly, the involvement of the normal lung in any disease process. In one series 14% of infants with pulmonary agenesis were still born, and 50% of the remainder died by the age of 5 years.

Lung transplantation in paediatric patients is being done with success. Recently, this operation was performed on a 2-week-old baby, who is the youngest child in the world to have a lung transplantation.

Dr Starnes, a cardiothoracic surgeon in the USA, performs lung transplant operations, both on young and older children. The long-term prognosis following transplantation is better in older children. It is too early to predict the prognosis in younger children. The oldest child surviving after lung transplantation has survived for 10 years.

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References

Management of Penetrating Craniocerebral Gunshot Injuries in Civilians

Sir,

Traditionally, the neurosurgical treatment of penetrating craniocerebral wounds has been one of aggressive intracranial debridement with an effort to locate and remove all the intracranial bone and metal fragments that are accessible with meticulous closure of dura and scalp. These procedures are, however, associated with a severe degree of neurological deficit and the possibility of converting a transient deficit to a permanent one. Now computed tomography (CT) scanning provides a quick non-invasive method of assessing the extent of cerebral injury and the intracranial contents, and safe and effective broad spectrum antibiotics provide sterilization of the potentially infected wounds. Based on these concepts, we have used a conservative surgical approach to intracranial debridement with emphasis on the preservation of cerebral tissue and function and care of scalp wounds in ten patients seen in the Riyadh Armed Forces Hospital. The features of these patients are summarized in Table 1. The patients were aged 11–50 years. They had only head injuries. All patients received intravenous antibiotics including gentamicin and metronidazole. An anti-convulsant was given only to one patient who had seizures.

Low velocity missiles which cause civilian gunshot craniocerebral injuries generally cause localized scalp destruction which is not associated with remote skull fracture, gaseous cavitation of the brain or exposure and shattering of the skull (as seen with high velocity missiles). We have advocated a conservative surgical approach to treat our civilian patients, and this line of treatment has also been advocated by others. Basically, our approach consisted of careful exploration of the wound through a circumferential craniectomy with removal of intracranial haematoma (if present), depressed or intradural bone fragment or foreign bodies. Necrosed brain was debrided. Bullet fragments were removed only when they presented themselves during gentle irrigation or haemostatic manoeuvres. No attempt was made to remove

Table 1

<table>
<thead>
<tr>
<th>Description</th>
<th>No. of patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glasgow Coma Scale (GCS) score at admission</td>
<td></td>
</tr>
<tr>
<td>9–15</td>
<td>2</td>
</tr>
<tr>
<td>6–8</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Initial focal neurological deficit</td>
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</tr>
<tr>
<td>Areflexia</td>
<td>3</td>
</tr>
<tr>
<td>Hemiplegia</td>
<td>3</td>
</tr>
<tr>
<td>Hemiparesis</td>
<td>3</td>
</tr>
<tr>
<td>Aphasia</td>
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<tr>
<td>None</td>
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<td>CT findings:</td>
<td></td>
</tr>
<tr>
<td>Group 1 (single lobe injury)</td>
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</tr>
<tr>
<td>Group 2 (unilateral multiple lobe injury)</td>
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</tr>
<tr>
<td>Group 3 (bilateral hemisphere injury)</td>
<td>4</td>
</tr>
<tr>
<td>Group 4 (supra- and infra-tentorial brain injury)</td>
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</tr>
<tr>
<td>Type of treatment:</td>
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<tr>
<td>Local wound care only</td>
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</tr>
<tr>
<td>Circumferential craniectomy and intracranial debridement</td>
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</tr>
<tr>
<td>Circumferential craniectomy, intracranial debridement and dural repair</td>
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</tr>
<tr>
<td>None (died soon after arrival)</td>
<td>2</td>
</tr>
<tr>
<td>Postoperative complications:</td>
<td></td>
</tr>
<tr>
<td>Subdural abscess</td>
<td>1</td>
</tr>
<tr>
<td>Fits</td>
<td>1</td>
</tr>
<tr>
<td>same</td>
<td></td>
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<tr>
<td>patient</td>
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a bullet fragment through uninjured cerebral tissue. The soft, sick and swollen injured brain was manipulated as little as possible. Those patients who showed no evidence of an intracranial space-occupying lesion on CT scan were treated by care of their scalp wounds only.

The Glasgow Coma Scale (GCS) score on admission is the most important predictor of the outcome. Three patients had GCS scores of 3 on admission and all died within 12 hours. The extent of cerebral injury was the other predictor of outcome. Group I and II patients made a good recovery (Glasgow Outcome Score of 5). Group 3 and 4 patients carried the worst prognosis. Amongst the four patients in Group 3, two died and the other two made adequate recoveries (Glasgow Outcome Score of 4 and 5). The single patient in Group 4 died. The occurrence of ventricular injury was also a predictor of poor outcome. This is consistent with earlier reports that patients with ventricular wounds carry the worst prognosis. The diagnosis of ventricular wounds in the present study was based upon the demonstration of a bullet trajectory through the ventricles. The two patients in Group 3 who died had associated ventricular injury and haemorrhage.

With the availability of CT scanning, a conservative surgical procedure has been advocated in the treatment of penetrating head injuries in civilians. The main objections to such an approach in the past has been a fear of the development of intracranial abscesses and chronic seizure disorders. The follow-up period in the present study was 6 months to 8 years. Only one patient developed a subdural abscess in the present series, and that was after delayed referral. It is likely that this conservative treatment may result in less cortical volume loss and may, therefore, lead to a diminished seizure frequency. Brain abscesses are unlikely to form around a metallic fragment. This may be the result of the sterilizing effect of the heat generated by a metal fragment on its adherent debris.

It is concluded that the most important factors for prognostication are the GCS score at the time of admission and the factors directly related to the wound such as bihemispheric or bicompartamental injury, ventricular injury or the presence of intracranial haemorrhage. From the results of this study, it appears that a conservative surgical procedure is the ideal treatment of low velocity penetrating cranio-cerebral gunshot injuries as indicated by other studies. This technique allows for conservation of cerebral tissues which minimizes exposing these patients to the risk of seizures and infection by the retained fragments. It has also significant functional implications as five of the six patients admitted with neurological deficit recovered to normal neurological status and one was left with a moderate disability. Similarly, aphasia resolved completely in all three patients in whom it was present.

References